C803L

INSTRUCTION MANUAL

VHF/FM SOLID-STATE BUSINESS/INDUSTRIAL TRANSCEIVER

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SECTION I
INTRODUCTION AND DESCRIPTION

1. INTRODUCTION

a. Scope

This Instruction Manual contains maintenance information for the STANDARD COMMUNICATIONS CORP Model SR-C803L VHF/FM Solid-State Business/Industrial Radiotelephone. The manual is divided into five sections; i.e., Introduction and Description, Theory of Operation, Maintenance, Schematic Diagrams, and a Mechanical Parts List.

b. Instruction Manual Revisions

STANDARD COMMUNICATIONS CORP will issue revision sheets to cover production and engineering changes in the equipment. In the case of minor changes these may be issued as a Service Bulletin, and the user may enter the revision on the appropriate schematic diagram and/or parts list. In the case of major changes a revised, or additional page(s) or schematic diagram(s) will be supplied. The new page(s) or schematic(s) should be inserted in the basic manual, and the "revision", "page number", and "date" entered on the List of Effective Pages.

c. Ordering Replacement Parts

STANDARD COMMUNICATIONS CORP maintains a complete

parts and service facility. When ordering replacement electrical components, or mechanical parts, be sure to include complete information; i.e., SCC part number, description, and schematic reference designator (if applicable). All necessary information can be obtained from the electrical parts list with the appropriate schematic diagram in Section IV, or from the mechanical parts list in Section V.

2. DESCRIPTION

The STANDARD COMMUNICATIONS CORP Model SR-C803L VHF/FM Solid-State Business/Industrial Radiotelephone provides for two-way communications between 148 and 174 MHz. The Model SR-C803L is FCC type approved for use under Parts 21, 89, 91, and 93, and includes provision for optional SR-CTN1L tone squelch installation. The equipment is designed to operate from a 12 volt DC (13.8 volt nominal) negative ground system, and is enclosed in a splash-proof, weather resistant aluminum case for environmental protection.

The Model SR-C803L is supplied with a SR-CMP03L microphone, SR-C202K loudspeaker, universal mounting bracket, and one pair of two-way communications crystals.

3. SPECIFICATIONS

Electrical and mechanical specifications of the Model SR-C803L are tabulated in Table 1-1.

TABLE 1-1. MODEL SR-C803L SPECIFICATIONS

GENERAL	
Type:	Single Channel VHF/FM All Solid-State Business/Industrial Radiotelephone
Frequency Range:	148 to 174 MHz

TABLE 1-1. MODEL SR-C803L SPECIFICATIONS (Cont)

GENERAL (Cont)	
Power Requirements	
Operating Voltage Range:	12.0 to 16.0V DC (negative ground only)
Power Source:	12V DC battery (13.8V DC nominal)
Maximum Battery Drain	
Receive:	0.2 ampere (standby)
	1.0 ampere (maximum audio)
Transmit:	2.0 amperes
Semiconductors:	37 transistors, 18 diodes
Controls:	TONE (tone squelch) switch, VOL (volume) and SQL (squelch) controls
Connectors:	MIC (microphone), ANT (antenna), SPKR (speaker), RT (receiver) and TT (transmitter) test receptacles
Metering:	Provision for metering receiver and transmitter circuits with 0-50 uA and 25-0-25 uA (FM detector circuit only) DC meters, or with SCC Metering and Functional Test Panel
Dimensions:	2-1/2" high x 6-7/8" wide x 9" deep (maximum)
Weight:	4.15 lbs (maximum)
Accessories Supplied	

TABLE 1-1. MODEL SR-C803L SPECIFICATIONS (Cont)

GENERAL (Cont)	
Microphone:	SR-CMP03L dynamic push-to-talk microphone in hi-impact cycolac case, with retractable neoprene covered coiled cord
Speaker:	SR-C202KL dynamic external 4 x 6 inch loudspeaker in hi-impact cycolac case, with aluminum mounting bracket
TRANSMITTER	
RF Power Output:	8 watts minimum
RF Output Impedance:	50 ohms nominal
Crystal Multiplication:	The crystal fundamental frequency is multiplied 18 times
Frequency Accuracy	
Frequency Setting:	±300 Hz
Frequency Stability:	±0.0005% from -22° to +140°F (-30° to +60°C)
Spurious Emissions:	Spurious emissions are more than 50 dB below carrier level
Modulation:	16F3 (phase modulation type)
Audio Response:	+1, -3; 6 dB/octave pre-emphasis 300 to 2500 Hz
	60 log f/3 dB above 3000 Hz
Deviation:	±5 kHz maximum (±4.5 kHz nominal)

TABLE 1-1. MODEL SR-C803L SPECIFICATIONS (Cont)

TRANSMITTER (Cont)	
Distortion:	6% maximum at 2/3 deviation
Noise Level:	-50 dB minimum
RECEIVER	
Type:	Double conversion superheterodyne
Intermediate Frequencies:	11.7 MHz first IF
	455 kHz second IF
Selectivity:	14 kHz minimum at 6 dB down (20 dB quieting method)
Modulation Acceptance:	±7 kHz minimum
Sensitivity	
20 dB Quieting:	0.8 microvolt maximum
12 dB SINAD:	0.5 microvolt maximum
Spurious Rejection:	-55 dB
Squelch Sensitivity	
Squelch Threshold:	0.5 microvolt maximum
Tight Squelch Threshold:	5.0 microvolts maximum
Audio Output	
10% Distortion Output:	3.0 watts minimum
Maximum Output:	5.0 watts minimum

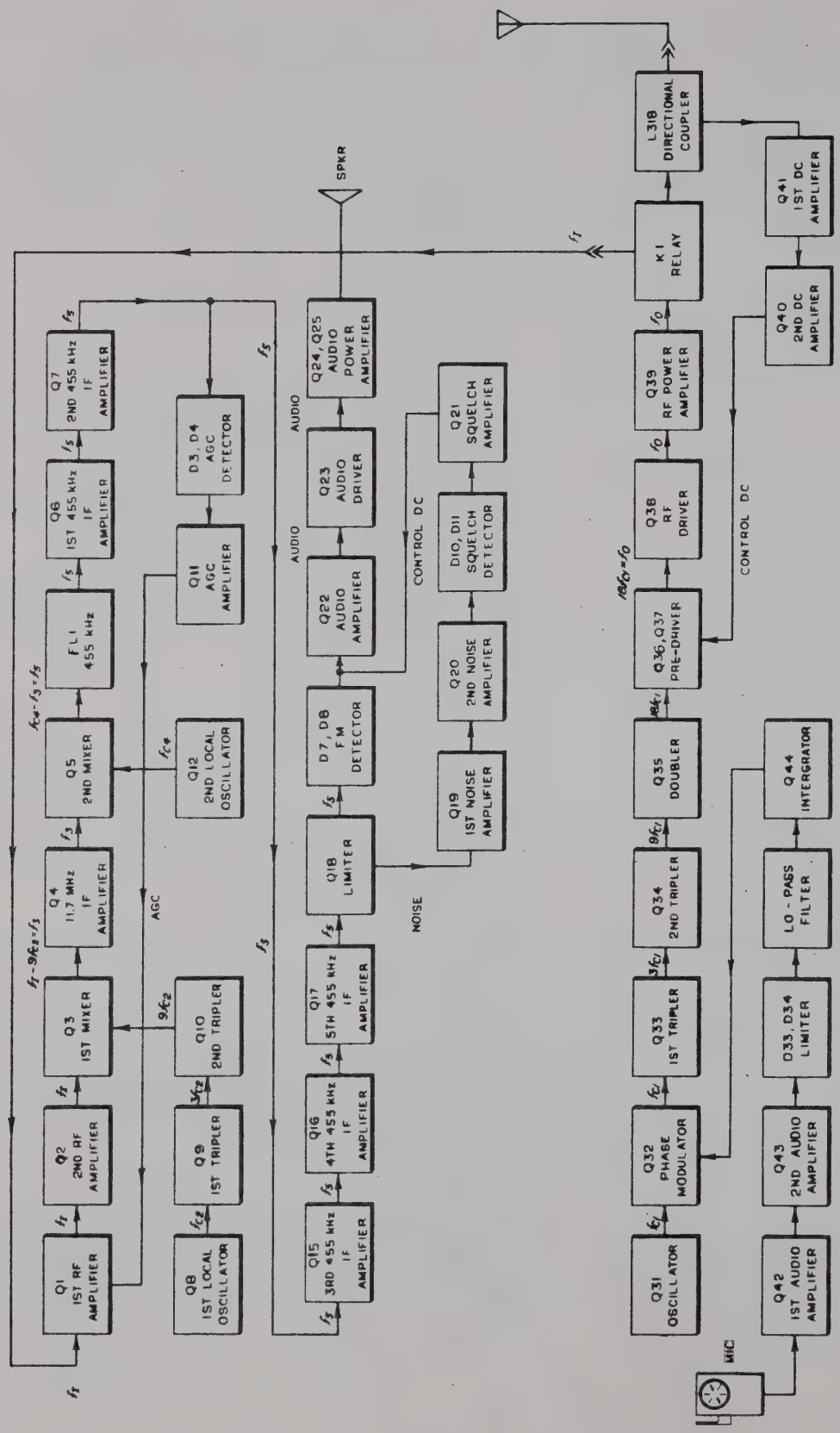

Figure 2-1. Functional Block Diagram - Model SR-C803L

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SECTION II
THEORY OF OPERATION

1. FUNCTIONAL OPERATION

The Model SR-C803L VHF/FM Radiotelephone is illustrated in the Functional Block Diagram (Figure 2-1). The radiotelephone consists of a crystal controlled transmitter and receiver, and is of modular construction. Solid-state circuitry is employed throughout, and the equipment is designed to operate from a 12 volt DC (13.8 volt nominal) system (negative ground). An optional SR-CTN1L Tone Coded Squelch board may also be installed in the unit to provide "private channel" operation if desired.

a. Receiver

The receiver is a double-conversion superheterodyne, designed for narrowband FM reception in the frequency range of 148 to 174 MHz.

The 148 to 174 MHz input signal is amplified by two RF stages and applied to a mixer, where it is heterodyned with the output of the first local oscillator and converted to the first IF, 11.7 MHz. The 11.7 MHz signal is then amplified and applied to a second mixer where it is heterodyned with the output of the second local oscillator, and converted to the second IF, 455 kHz. A selective filter provides the narrowband selectivity at this point, and the signal is amplified by five 455 kHz stages and applied to a limiter and FM detector. The limiter removes any vestige of amplitude variation from the signal, while the FM detector functions to produce an audio output in response to a corresponding frequency (or phase) shift in the 455 kHz IF signal.

The FM detector output is then amplified by three audio stages and applied to the speaker.

A "noise-actuated" squelch circuit is included to "quiet" the receiver when no carrier is present. This is accomplished by amplifying and detecting the "noise" in the 455 kHz IF output. This produces a DC voltage that is applied to cut off the audio amplifier until a signal overcomes the "noise" and "opens" the audio channel. A carrier derived AGC voltage is also obtained from the 455 kHz IF amplifier. This is employed to control the gain of the first RF stage, maintaining a constant signal through the receiver.

b. Transmitter

The transmitter is designed for narrowband FM (phase modulated) transmission in the frequency range of 148 to 174 MHz.

(1) Generation of Phase Modulated Signal

The oscillator is crystal controlled and generates the initial RF signal in the frequency range of 8.222 to 9.666 MHz. The RF signal is then applied to the phase modulator, together with the audio modulating signal. The audio modulating signal varies the internal and input capacities of the phase modulator transistor, in turn causing the applied RF signal to be phase shifted at an audio rate.

The maximum angular phase shift produced by the modulator without distortion is relatively small. Therefore, the oscillator frequency is multiplier 18 times to obtain the desired deviation at the output frequency of 148 to 174 MHz.

Two tripler stages and one doubler provide the necessary 18 times frequency multiplication, and a pre-driver and driver are employed to amplify the 148 to 174 MHz signal prior to application to the final RF power amplifier. An automatic current control (ACC) circuit is included to prevent damage to the final stage, as could occur if excess current is drawn. A directional coupler samples the antenna VSWR, producing the ACC signal applied to the pre-driver, which acts as a variable gain amplifier to reduce the drive to the final stage when the VSWR increases.

The final RF power amplifier develops the output signal applied to a four-section pi-network. The pi-network in turn matches the output impedance of the power amplifier to the antenna, as well as providing the necessary selectivity to attenuate spurious and harmonic signals which might appear in the output.

(2) Instantaneous Deviation Control

The transmitter contains an instantaneous deviation control (IDC) circuit to prevent a higher than normal output level from the microphone from causing over-deviation of the output signal.

Under normal conditions the audio signal from the microphone is amplified and 6 dB/octave pre-emphasis is added. The signal is then applied through a peak limiter and low-pass filter to the integrator. At normal, or lower, microphone output levels the audio signal is not limited, and the integrator applies a 6 dB/octave de-emphasis to offset the pre-emphasis from the amplifier. This results in a "flat" output in the audio signal applied to the phase modulator stage. The phase modulator in turn has an inherent 6 dB/octave pre-emphasis characteristic, resulting in a 6 dB/octave pre-emphasized output modulation from the transmitter.

When the microphone output level increases to a point where over-deviation could occur the positive and negative peaks of the waveform are clipped in the limiter. This produces an essentially square wave constant amplitude output, removing the 6 dB/octave pre-emphasis applied to the signal in the amplifier. The limited signal is applied through the low-pass filter, which reshapes the audio waveform, to the integrator. The integrator applies the 6 dB/octave de-emphasis which then offsets the inherent 6 dB/octave pre-emphasis of the phase modulator. This results in a transmitter output frequency deviation vs. frequency that is essentially flat.

c. Tone Coded Squelch

The optional SR-CTN1L "tone-coded" squelch circuit provides a "private channel" facility, when installed in the SR-C803L radiotelephone. The "private channel" permits the receiver to remain "muted" until a signal is received containing a specific sub-audible tone,

at which time the audio channel is "opened" and the transmission is audible. In this manner transmissions from other users of a shared frequency will not cause the receiver to respond. The same circuit is used to generate the sub-audible tone applied to the transmitter carrier.

When the "private channel" is actuated (TONE switch in ON position and microphone on the hanger) a DC level disables the regular "noise-actuated" squelch circuit in the receiver, and a squelch amplifier in the "tone-coded" squelch circuit inhibits the receiver audio amplifier to mute the receiver. Receipt of a transmission containing the sub-audible tone does not affect the DC level disabling the "noise-actuated" squelch circuit, but turns "off" the tone squelch amplifier to "open" the audio channel.

When the microphone is removed from the hanger to "transmit" the DC level is removed from the "noise-actuated" squelch circuit. Any signal on the frequency will then "open" the audio channel, permitting the operator to ascertain that the frequency is "clear" before transmitting. Pressing the push-to-talk button on the microphone places the radiotelephone in the "transmit" mode, and applies the sub-audible tone as modulation on the transmitter carrier to actuate the desired receiver.

2. CIRCUIT ANALYSIS

a. Power Input

The +12 volt DC input power (Figure 4-1) is controlled by a switch on the VOL control, applied to a pilot lamp, PL1, and through an LC filter, L322 and C373, to terminals P12 and P43 on the receiver and transmitter circuit boards, respectively. A diode, D35, is connected across the power input. This shunts the input voltage to ground if the equipment is accidently connected with the polarity reversed, blowing the fuse and protecting the circuitry from damage.

The +12V DC at terminal P12 is applied to the receiver audio

amplifier circuitry, while the +12V DC at terminal P43 is applied to the coil and arm of one set of contacts on the "transmit-receive" relay. Function of the relay (located on the transmitter circuit board) is as follows:

(1) Receive Mode

In the "receive" mode the relay is de-energized, and the +12V DC is applied from the closed contacts through terminal P44 to terminal P5 on the receiver circuit board. The +12V DC at P5 energizes the remainder of the receiver circuitry.

(2) Transmit Mode

Pressing the push-to-talk button on the microphone provides a ground return through terminal P50 for the relay coil. This energizes the relay, removing the +12V DC power from P5 on the receiver, and applying it to actuate the transmitter. A second set of contacts on the relay transfers the antenna from the receiver to the transmitter.

In the "transmit" mode, the +12V DC from the relay is also applied from terminal P46 to P7 on the receiver circuit board. The +12V DC at P7 provides a "muting bias" to the receiver, silencing the audio circuits while the unit is in the "transmit" mode, and also illuminates the "transmit" pilot lamp, PL2.

b. Receiver

(1) RF Amplifiers

The RF input signal (Figure 4-2) from the antenna relay is broadly resonated by the input tuned circuit, and coupled to gate "1" of the first RF amplifier, Q1. Metal Oxide Silicon Field Effect Transistors (MOSFET) are employed in the RF amplifier and first mixer stages to minimize spurious and intermodulation responses, and provide low-noise conversion. Forward bias is applied to gate "2", and the drain return for this stage is through the AGC amplifier, Q11, to the receiver +7V DC buss. This permits the AGC level (derived from the 455 kHz IF signal) to control the gain of the first RF

amplifier to provide AGC action.

The output signal from the drain of Q1 is coupled through a double tuned circuit to gate "1" of the second RF amplifier, Q2. The drain output is then coupled through a second double tuned circuit to gate "1" of the first mixer, Q3.

Diode D14 (a diode connected transistor) effectively "grounds" the receiver input during "transmit" to protect the first RF amplifier, Q1.

(2) First Mixer and 11.7 MHz IF Amplifier

The 148 to 174 MHz input signal is applied at gate "1" of Q3, while the first local oscillator injection signal (136.3 to 162.3 MHz) is applied at gate "2", together with forward bias. The 11.7 MHz difference signal at the drain of Q3 is then coupled through a double tuned circuit to the base of the 11.7 MHz IF amplifier, Q4. The 11.7 MHz signal is amplified by Q4, then coupled through a second double tuned circuit to the base of the second mixer, Q5.

The input signal (148 to 174 MHz) at gate "1" of Q3 is detected by D2 to provide a DC level applied through terminal P2 to terminal RT2 on the receiver test receptacle. Similarly, the first local oscillator injection signal at gate "2" is detected by D6 to provide a DC level applied through P20 to terminal RT3. These DC levels may be used to isolate a malfunction in troubleshooting, or monitored during alignment when the preceeding tuned circuits are adjusted.

(3) First Local Oscillator and Multipliers

The first local oscillator injection frequency is 11.7 MHz below the input signal frequency in all cases. The fundamental crystal frequency is multiplied nine times to reach the injection frequency. The actual crystal operating frequency is in the 16 MHz range, and is determined from the equation:

$$f_c = (f_i - 11.7)/9$$

where: f_c = fundamental crystal frequency in MHz

f_i = desired receiver signal frequency in MHz

The crystal is connected between the base of Q8 and ground. Transistor Q8 functions as a fundamental forward biased modified Colpitts oscillator, with the output taken at the emitter and coupled to the base of the first tripler, Q9. A trimmer capacitor permits the crystal to be "netted" to the exact channel frequency.

The output of Q9 is resonated to the third harmonic and coupled through a double tuned circuit to the base of the second tripler, Q10. Forward bias is applied to both Q9 and Q10, and the output of Q10 in turn is resonated to the ninth harmonic of the crystal and coupled through a double tuned circuit to gate "2" of the first mixer, Q3.

(4) Second Mixer

The 11.7 MHz signal from Q4 is applied at the base of Q5, together with a 12.155 MHz injection signal derived from the second local oscillator, Q12. The two signals are heterodyned by Q5, and the resulting 455 kHz difference signal (12.155 MHz, -11.700 MHz) at the collector becomes the second IF. Transistor Q12 functions as a fundamental forward biased modified Colpitts oscillator, with the 12.155 MHz crystal connected between base and ground and the second local oscillator injection signal taken from the emitter.

(5) 455 kHz IF Amplifier and Limiter

The 455 kHz signal from Q5 is applied through a selective filter to the base of the first 455 kHz IF amplifier, Q6. The filter employs ceramic crystal elements, Y3 and Y4, and provides a steep skirted shape factor to attenuate signals falling outside the required IF passband, thus establishing the overall receiver selectivity.

Transistors Q6, Q7, and Q15 thru Q17, function in a five-stage DC connected cascade circuit, with the output applied to the base of the limiter, Q18. The 455 kHz signal at the collector of

the second stage, Q7, is detected by D5 to provide a DC level applied through terminal P1 to terminal RT4 on the receiver test receptacle, and is also applied to the AGC voltage doubler, D3 and D4. The DC level at RT4 may be used to isolate a malfunction in troubleshooting, or monitored during alignment of the 11.7 MHz tuned circuits.

The five cascade IF stages provide some limiting action, while the overall gain of the amplifier, together with forward bias applied to the base permits Q18 to saturate. The output from Q18 is applied to the FM detector, D7 and D8, and also to the "noise-actuated" squelch circuit.

(6) AGC Circuit

The DC level derived from diodes D3 and D4 represents the instantaneous carrier level in the 455 kHz IF amplifier. This level is applied to the base of the AGC amplifier, Q11, which is effectively in series with the collector return for the first RF amplifier to the receiver +7V DC buss.

Transistor Q11 is a PNP type, and a decrease in the IF signal, detected by D3 and D4, raises the collector level of Q1, increasing the gain in the first RF stage proportionally.

(7) FM Detector

The 455 kHz signal from Q18 is applied across the paralleled primary windings of L16 and L17. The secondary windings of L16 and L17 are in series, with diodes D7 and D8 connected to detect a positive or negative voltage in the secondary of L17. As the secondary winding of L17 and the two diodes represent a balanced circuit, an unmodulated 455 kHz signal from Q18 will produce "zero" voltage at the center tap. However, a frequency deviation in either direction from a modulated signal causes a phase shift in the winding, developing a corresponding positive or negative voltage at the center tap to reproduce the audio signal originally impressed on the carrier.

The audio signal is then applied through a de-emphasis filter network and across the VOL control to the first audio amplifier, Q22, and through terminal P3 to terminal RT6 on the receiver test receptacle. The signal at RT6 may be used to isolate a malfunction

in troubleshooting, or monitored during adjustment of the detector "crossover point".

(8) Noise-Actuated Squelch Circuit

The collector detected AM signal from Q18 is coupled through a low-frequency double tuned circuit and across the SQL control to the base of the first noise amplifier, Q19. Transistors Q19 and Q20 function in a two-stage cascade circuit, with the output applied to the voltage doubling squelch detector diodes, D10 and D11, while D9 provides temperature compensation. The noise detector output is filtered and applied to the base of the squelch amplifier, Q21. The collector of Q21 in turn is tied directly to the base of the first audio amplifier, Q22, together with the audio output from the FM detector.

When no carrier is present, "noise" in the 455 kHz IF is amplified, filtered, and detected to forward bias Q21 into conduction. This in turn clamps the base of Q22 to ground, cutting Q22 "off" and silencing the audio amplifier. The SQL control permits the threshold level for the "noise" signal to be adjusted, thus setting the point where the squelch circuit will be actuated.

However, when a carrier is present the "noise" in the 455 kHz IF decreases due to the quieting action of the limiter, in turn reducing the output from the squelch detector and causing Q21 to stop conducting. This forward biases Q22, permitting the transistor to function normally and amplify the audio signal applied at the base from the FM detector.

During "transmit", +12V DC bias from the transmitter is applied to forward bias Q21 and silence the audio amplifier.

(9) Audio Circuit

The audio signal from the FM detector is applied across the VOL control to the base of the first audio amplifier, Q22. Transistor Q22 is in series with the PNP driver, Q23, to the +12V DC buss, together with the audio transformer, T1, and diode D12 in the collector return for Q23. Diode D12 (diode connected NPN transistor) provides DC, temperature compensation for Q24 and Q25. Power amp-

lifiers Q24 and Q25 function in a conventional push-pull configuration, with the audio output transformer, T2, forming the collector load. The power amplifier will deliver three watts of low distortion audio output, and a maximum of five watts from the secondary winding of T2 through terminal P16 to the SPKR receptacle, and also to terminal RT7 on the receiver test receptacle. The signal at RT7 may be used to isolate a malfunction in troubleshooting, or monitored during alignment when the 20 dB "quieting" is checked or adjusted.

c. Transmitter

(1) Audio Amplifier

The transmitter employs a dynamic type microphone, converting the impressed speech to a variable voltage (variable in both amplitude and frequency), or audio signal. The audio signal is then applied through an RF filter network to the base of the first audio amplifier, Q42.

The collector output from Q42 is applied through a 6 dB/octave pre-emphasis circuit to the base of the second audio amplifier, Q43. The collector output or Q34 is then applied to the IDC limiter, diodes D33 and D34.

(2) IDC Circuit

The pre-emphasised audio signal from Q43 is of varying amplitude. Diodes D33 and D34 are biased to clip, or limit, the audio waveform amplitude on both positive and negative peaks at a predetermined level. This produces the constant amplitude output when the audio signal exceeds the "clipping" level, and this limited signal is applied to the low-pass filter.

The low-pass filter provides a post-limiter audio roll off function, attenuating frequencies above 3 kHz as required by the FCC. This attenuation of frequencies above the speech range limits the transmitter modulation spectrum to the required bandwidth, and reshapes the audio waveform. The signal is then applied to the base of the integrator, Q44.

The integrator circuit provides the 6 dB/octave de-empahsis to the signal. This results in an essentially flat frequency response of the audio modulating signal being applied to the phase modulator, Q32, across the IDC potentiometer, R351. For signals below the limiting level, the modulated output follows a 6 dB/octave pre-emphasised characteristic.

The integrator output, at the collector of Q44, provides an impedance match between the deviation limiting circuit and the phase modulator stage. The IDC potentiometer in turn adjusts the audio level applied to the emitter of the phase modulator, Q32, thus setting (and limiting) the transmitter deviation to ±5 kHz.

(3) Oscillator and Phase Modulator

The crystal is connected between the base of Q31 and ground. Transistor Q31 functions as a fundamental forward biased 8.222 to 9.666 MHz modified Colpitts oscillator, with the signal taken at the emitter and coupled to the base of the modulator, Q32. A trimmer capacitor permits the crystal to be "netted" to the exact channel frequency.

The audio modulating signal from Q44 is applied at emitter of Q32, varying the capacity of the stage in accordance with the applied audio voltage. With a fixed phase shift shunting the stage and a variable phase shift through Q32, an overall variable phase shift is produced in the output, across L301. This output is then coupled to the base of the first tripler, Q33. Variable inductor L301 permits the modulator output to be maximized.

(4) Frequency Multipliers

The 8.222 to 9.666 MHz phase modulated signal from Q32 is multiplied three times by Q33, and coupled through a double tuned circuit to the base of the second tripler, Q34. Forward bias is applied to the base of Q33 to increase the sensitivity of this stage. This is required due to the relatively low output obtained from the phase modulator stage.

The second tripler, Q34, and doubler, Q35, function as conventional class "B" frequency multipliers, and develop the 148

to 174 MHz signal applied to the pre-driver stage, Q36 and Q37. Double tuned circuits are also employed for interstage coupling between Q34 and Q35, and between Q35 and the pre-driver input.

The DC voltages developed across the emitter resistances of Q34 and Q35 are applied through terminals P33 and P34 to terminals TT2 and TT3 respectively of the transmitter test receptacle. These DC levels may be used to isolate a malfunction in troubleshooting, or monitored during alignment when the preceeding tuned circuits are adjusted.

(5) Driver Stages and Automatic Current Control

The 148 to 174 MHz signal from Q35 is applied to the bases of the paralleled pre-drivers, Q36 and Q37. The emitter return for these two transistors in turn is through the ACC transistor, Q40, to ground. Transistor Q40 is forward biased from the transmitter +12V DC buss, and normally operates in a saturated condition, appearing as a low "emitter resistance" to Q36 and Q37.

The reflected RF current at the antenna is sampled by a directional coupler type transformer, L318, and applied through a rectifier, D32, to the base of a DC amplifier, Q41. The collector of Q41 is tied directly to the base of Q40, and Q41 is normally "cut off", having no effect on the state of Q40. However, if a condition arises where excessive reflected current is present in the antenna circuit (due to a high VSWR caused by a mismatched antenna), the base bias of Q41 is overcome and the transistor will conduct. This in turn lowers the collector level (and the base of Q40) and reduces conduction through Q40, appearing as an increasing "emitter resistance" to Q36 and Q37 to reduce the gain of the pre-driver until the RF output current decreases to a safe level.

The pre-driver output at the paralleled collectors of Q36 and Q37 is then applied to the base of the driver, Q38. The driver further amplifies the 148 to 174 MHz signal, and the output is applied to the base of the final RF power amplifier, Q39. Transistors Q36 thru Q38 all function as conventional class "C" amplifiers.

The DC voltage at the emitters of Q36 and Q37 (developed across Q40) is applied through terminal P35 to terminal TT4

of the transmitter test receptacle. This DC level may be used to isolate a malfunction in troubleshooting, or monitored during alignment when the preceeding tuned circuits are adjusted.

(6) Final RF Power Amplifier and Output Circuit

The 148 to 174 MHz signal from Q38 is amplified by Q39, which functions as a conventional class "C" power amplifier. The four-section pi-network, L314 thru L317, and C329 thru C333, matches the collector output of Q39 to the 50-ohm antenna, and also functions as a low-pass filter to attenuate signals above the transmitters operating range. This prevents harmonics of the carrier frequency, or other possible spurious products, from being radiated by the antenna. The pi-network output is applied through the antenna relay and current transformer to the ANT receptacle.

d. Tone Coded Squelch

(1) Receive State

In the receive state, +12V DC is applied through terminal P5 (Figure 4-4) to the emitter of the DC switch, Q8, while the collector return is through R27 to ground. When the microphone is on the hanger, R551 (located inside the microphone) completes the base bias return for Q8 through R25. In this condition Q8 is conducting, or "on", and produces a voltage drop across R27. As Q8 is a PNP transistor, the collector output appears as a positive level, and is applied through R16 and R17 to the base of the "tone squelch" amplifier, Q6, and also through R24, diode D11, and terminal P8 to the emitter of Q20 (receiver squelch "noise" amplifier).

The collector return for Q6 is through terminal P2 and the bias resistor, R84, of the receiver audio amplifier, Q22, to +12V DC. A positive level at the base of Q6 causes the transistor to conduct, producing a voltage drop across R84 that is applied at the base of Q22. This inhibits Q22, disabling the receiver audio channel as long as Q6 is "on".

The positive level at the emitter of Q20 has the same effect as application of a negative level at the base. This in turn inhibits Q20, disabling the receiver squelch circuit as long as Q8 is "on".

The receiver FM detector output is applied through terminal P1 and a low-pass filter, L1 and C2 thru C4, to the base of Q1. Transistors Q1 and Q2 function as audio amplifiers, with the input coil of the resonant reed forming the collector load for Q2. In the receive state, operating voltage for Q1 and Q2 is obtained from the receiver +12V DC buss through diodes D6 and D12, and R28.

The resonant reed functions as a highly selective audio filter, and will only vibrate when a specific frequency is applied to the input coil. When a proper frequency appears on the FM detector output the reed vibrates, coupling the signal across the output coil to the base of Q3.

In the receive state, the collector output from Q3 is applied through diode D2 and C16 to the base of the DC amplifier, Q5, and the cathode of D5. The collector return in this state is through R16, and the operating voltage is obtained through diode D12 and R28 from the receiver +12V DC buss at terminal P5.

Diode D5 functions as a shunt rectifier at the base of Q5, removing the negative component. The resulting positive signal is amplified by Q5, smoothed by C18 and C19, and applied to the base of Q6. The collector return for Q5 is through R16 to the collector of Q8. Thus the negative level developed across R16 is referenced to the output of Q8, and turns Q6 "off". With Q6 cut-off the voltage drop across R84 (Q22 bias resistor) disappears, increasing the positive bias at the base of Q22, and "opening" the receiver audio channel.

(2) Transmit State

Removing the microphone from the hanger "opens" the ground return to the base of Q8, turning Q8 "off". With Q8 cut-off the voltage drop across R27 disappears, removing the positive inhibiting level at the base of Q20, and returning control of the receiver audio channel to the "noise-actuated" squelch circuit. This permits the operator to ascertain if the frequency is in use prior to transmitting.

In the transmit state, +12V DC is applied through terminal P4 to the emitter of Q4, while the collector return is through

the deviation potentiometer, R14. The transmitter +12V DC buss also supplies operating voltage through diode D8 to Q1 and A2, and through D4 to Q3, in this state.

Application of voltage (pressing the push-to-talk button on the microphone) initially pulses the resonant reed, producing a pulse at the base of Q3. In the transmit state, the collector output from Q3 is applied through diode D3 to the base of Q4, where it is amplified and applied through a feedback circuit, C6 and R2, to the base of Q1. Transistors Q1 and Q2 provide further amplification, driving the resonant reed. The feedback circuit provides a phase shift to sustain oscillation, while the reed insures the specific frequency is produced at the collector of Q4, across R14.

The output signal is applied through C14 and R360 (on the transmitter circuit board) to the base of the phase modulator, Q32. The tone signal at the base of Q32 and the speech signal at the emitter both modulate the stage to appear in the transmitted FM carrier.

SECTION III
MAINTENANCE

1. GENERAL

a. Maintenance Philosophy

STANDARD COMMUNICATIONS CORP recommends that field maintenance be limited to replacement of complete subassemblies (receiver, transmitter, and tone squelch board) whenever possible. The defective subassembly may then be returned to the factory for repair, including updating (if required), realignment, and complete functional testing.

(1) Factory Updating

Factory updating of a subassembly will reflect the latest circuit (and/or component) configuration of the particular circuit board. However, in cases where a circuit board layout has been revised (indicated by a new dash number) the updating will be limited to the final configuration of the board prior to the layout revision.

(2) Field Repair

Where it is desired to perform field repair of subassemblies, individual components may be ordered as described in Section I, Paragraph 1.c. In addition, a semiconductor kit, SCC P/N SR-SPK4 is available. This kit contains recommended quantities of semiconductors to sustain up to 10 units for a period of one year.

b. Use of Schematic Diagrams

Schematic diagrams for the individual circuit boards and chassis interwiring of the Model SR-C803L radiotelephone are located in Section IV of this manual. The schematics are provided as an aid in troubleshooting and/or repair of the equipment.

(1) Circuit Diagrams

The circuit diagram shows the actual circuit on the individual board, together with associated peripheral components (controls, crystals, etc.) required to illustrate the complete signal path through the circuit. Appropriate voltage measurements are also shown on the circuit diagram to aid in locating a malfunctioning circuit or component.

(2) Printed Circuit Board and Component Location

To aid in circuit tracing, a layout of the printed circuit board, showing individual component locations, is included.

(3) Electrical Parts List

A complete list of all electrical components on the printed circuit board is provided. This list contains the component reference designator, electrical description, and SCC part number.

NOTE

The above material reflects the exact configuration of units manufactured in December of 1969. Slight variations may be found in units manufactured before this date. In general, if the unit is being repaired the circuit configuration should be changed to reflect the configuration defined in this manual (or its revisions). Notice will be provided covering changes made after this date. When extensive production changes are made the printed circuit boards will be revised and the revision number will be changed. New material will be provided to cover this change.

2. EQUIPMENT REQUIRED FOR MAINTENANCE

a. Test Equipment and Special Tools

The test equipment and special tools (or equivalent) required to maintain the Model SR-C803L radiotelephone are tabulated in Table 3-1.

b. SCC Metering and Functional Test Panel

(1) Description

The SCC Metering and Functional Test Panel (Item 3, Table 3-1) provides a convenient means of measuring or monitoring selected circuit parameters during bench testing of the radiotelephone.

The test panel contains four DC meters (0-50 uA, 25-0-25 uA, 0-25V, and 0-10A), appropriate meter selector and transmitter "keying" switches, a speaker, and the circuitry and wiring required to provide DC power and microphone inputs, and audio output interface for the unit under test. Cables are supplied to interconnect the test panel to the radiotelephone via the RT, TT, and MIC receptacles.

(2) Use

The metering functions may be employed as an aid in troubleshooting and/or alignment of the unit in both the transmit and receive modes. Refer to Paragraph 4. c of this Section for a description of the individual functions monitored on the 0-50 and 25-0-25 uA DC meters, together with the nominal meter readings obtained in each position under proper operating conditions. The 0-25V and 0-10A DC meters permit the input voltage and total current drawn by the unit under test to be monitored.

c. SCC Circuit Board Test Fixture

TABLE 3-1. TEST EQUIPMENT AND SPECIAL TOOLS

ITEM	DESCRIPTION AND EQUIPMENT RECOMMENDED	FUNCTION
1	FM Communications Monitor: Cushman Electronics Model CE-3 recommended	RF alignment and frequency measurements
2	FM Signal Generator: Motorola Model T1035A recommended	RF and IF alignment
3	Metering and Functional Test Panel: SCC P/N MFTP-1	Monitoring circuit parameters (NOTE 1)
4	Circuit Board Test Fixture: SCC P/N CBTF-1	Provides input, output, and control functions for boards (NOTE 2)
5	RF Wattmeter and 50-ohm Load, 0 to 10 watts minimum: Motorola Model 6154 recommended	Transmitter RF output measurements
6	VTVM: Hewlett-Packard Model 400 recommended	Receiver 20 dB quieting test
7	Field Intensity Meter, 20 to 400 MHz: Stoddart Model NM-30A recommended	Harmonic and spurious emission checks
8	Directional Coupler: Bird Model 43 with Model 4274 element recommended	Harmonic and spurious emission checks
9	13.8V DC Power Source, 3 amp or greater capacity	Power source

TABLE 3-1. TEST EQUIPMENT AND SPECIAL TOOLS (Cont)

ITEM	DESCRIPTION AND EQUIPMENT RECOMMENDED	FUNCTION
10	Alignment Tool: SCC P/N AT-1 recommended	Adjustment of slug tuned inductors
11	Alignment Tool: Walsco No. 2525 recommended	Adjustment of trimmer capacitors
12	Plastic Tweezer: SCC P/N PT-1	Adjustment of air wound inductors
13	Audio Oscillator: Hewlett-Packard Model 204C recommended	Tone squelch circuit adjustment and testing
14	Digital Frequency Meter: Eldorado Model 1635 recommended	Tone squelch circuit adjustment and testing

NOTES:

1) A 0-50 and 25-0-25 uA DC meter may be used in lieu of Item #3 if it is not available. Connect the meter between the appropriate pin of the test receptacle (positive) and chassis (negative), where a switch position is called out for the Metering and Functional Test Panel.

2) The Circuit Board Test Fixture is not required when troubleshooting and alignment are performed with the circuit boards installed in the radiotelephone.

(1) Description

The SCC Circuit Board Test Fixture (Item 4, Table 3-1) provides a convenient means of mounting the transmitter and receiver circuit boards when they are removed from the unit for service. The test fixture contains volume and squelch controls, provision for transmitter and receiver crystals, and all necessary cables to provide electrical interface with the Metering and Functional Test Panel.

(2) Use

The control functions may be employed to simulate the normal peripheral circuitry associated with the particular board during troubleshooting and/or alignment of the unit in both the transmit and receive modes. The cables permit power, signal inputs and outputs, and interface with the metering functions to be obtained when the board is removed from the unit.

3. SERVICING PRACTICES

a. General Precautions

Solid-state circuits and components exhibit extremely high operational reliability. However, when removing or replacing these components during troubleshooting or repair, certain precautions must be observed. These may be summarized as follows:

(1) Use extreme care in soldering solid-state components, small capacitors, inductors, or resistors.

CAUTION

Never remove or install a transistor in an operating circuit. When removing or installing transistors always use a heat sink; i.e., grasp the lead being soldered with a pair of long nose pliers between the transistor and the connection.

(2) Do not use a soldering iron rated at more than 40 watts: Do not apply heat to the connection for more than a few seconds at a time.

(3) Do not excessively bend or twist leads of transistors, diodes, or small capacitors, inductors, or resistors; they break easily.

(4) Do not apply and DC potentials to signal input or output terminals.

(5) Do not reverse battery connections. Never use a battery eliminator, or power source, for testing solid-state circuitry unless it is specifically designed for this application. If in doubt, use a battery providing the correct voltage, and of adequate capacity.

b. Transistor Circuitry Resistance Measurements

Observe the following precautions when making resistance measurements in transistor circuitry:

(1) Low sensitivity multimeters should not be used in servicing solid-state equipment. Use a multimeter of at least 20,000 ohms/volt, or a VTVM.

CAUTION

Never use a multimeter on an ohmmeter range if it draws more than 1.0 milliampere through a low restance milliammeter in series with the test lead.

(2) When making resistance checks in transistor circuitry make sure correct polarity and ohmmeter range is observed. Allow sufficient time for the relatively large value capacitors employed to charge. The most accurate procedure is to remove the suspected component from the circuit, and then measure it.

c. Transistor Testing

(1) Preferred Method

The most desirable method of testing a transistor is to use a commercial transistor tester, or to replace the suspected transistor with one known to be good.

(2) Alternate Method

If neither a transistor tester or replacement transistor is available, the suspected transistor may be given a simple test with an ohmmeter, as follows:

(a) NPN Transistors

To check an NPN transistor, proceed as follows:

1) Connect the negative lead of the ohmmeter to the base, and the positive lead to the emitter: The resistance reading should be high.

2) With the negative lead on the base, connect the positive lead to the collector: The resistance reading should be high.

3) Connect the positive lead to the base, and the negative lead to the emitter: The resistance reading should be low.

4) With the positive lead on the base, connect the negative lead to the collector: The resistance reading should be low.

5) Connect the positive lead to the collector, and the negative lead to the emitter: The resistance reading should be high.

(b) PNP Transistors

To check a PNP transistor, reverse the above procedure; i.e., use positive for negative, and vice versa.

NOTE

If a defective transistor is found, check out the associated circuitry before replacing the transistor. If a short, or other fault exists, inserting a new transistor will generally result in another ruined transistor.

4. TROUBLESHOOTING

a. Troubleshooting Philosophy

Due to the high reliability of solid-state components, a malfunction within the unit will in most cases be traced to a dirty, or bent terminal on a circuit board or connector, or a possible broken, or loose, wire in one of the input or output circuits. Normally, an analysis of the receiver and transmitter test functions can be employed to isolate a particular malfunctioning circuit within the unit The schematic diagrams and circuit board layouts in Section IV can be used in troubleshooting, together with the theory of operation information in Section II.

b. Test Receptacle Connections and Functions

(1) Description

The receiver (RT) and transmitter (TT) test receptacles permit selected circuit parameters within the unit to be measured as an aid in troubleshooting, or monitored during alignment to provide an indication when the individual circuits are properly tuned. Where RF signal levels are to be measured in the receiver (signal and LO) input to mixer, and 455 kHz IF amplifier, shunt diodes provide a DC level at the test connection. In addition, appropriate scaling resistances are included to provide an indication within the range of the appropriate DC microammeter(s).

TABLE 3-2. RECEIVER TEST RECEPTACLE FUNCTIONS

PIN	TEST SET	PARAMETER	NOMINAL METER INDICATION	TEST FUNCTION
1	- - -	- - -	- -	Chassis ground
2	S2/RT2	Q3 gate "1"	35 uA (1)	RF signal at first mixer input: Alignment of L1, and L3 thru L6
3	S2/RT3	Q3 gate "2"	10 uA	First LO injection: Alignment of L12 thru L15
4	S2/RT4	Q7 collector	15 uA (2)	455 kHz second IF signal: Alignment of L7 thru L10
5	- - -	Not used	- -	- - -
6	M3	FM detector	"0" (3)	Detector crossover point: Alignment of L17
7	AUDIO	T2 secondary	- - (4)	Audio output: Measurement of 20 dB quieting
8	S1/RT8	DC power input	+13.8V DC (5)	Present when 13.8V DC applied to radiotelephone
9	S1/RT9	Receiver DC power buss	+13.8V DC	Present in receive mode only

(1) 0.1V signal input at ANT receptacle.
(2) 100 uV signal input at ANT receptacle.
(3) Use 25-0-25 uA DC meter or Test Set.
(4) Use VTVM at RT7 or AUDIO TEST receptacle on Test Set for 20 dB quieting measurement.
(5) Use 0-25V DC meter or Test Set.

TABLE 3-3. TRANSMITTER TEST RECEPTACLE FUNCTIONS

PIN	TEST SET	PARAMETER	NOMINAL METER INDICATION	TEST FUNCTION
1	- - -	- - -	- -	Chassis ground
2	S2/TT2	Q34 emitter	30 uA	Second tripler current: Alignment of L302, L303
3	S2/TT3	Q35 emitter	35 uA	Doubler current: Alignment of L302 thru L305
4	S2/TT4	Q36, Q37 emitter	30 uA	Pre-driver current: Alignment of L306, L307
5	- - -	Not used	- -	- - -
6	- - -	Not used	- -	- - -
7	- - -	Not used	- -	- - -
8	S1/TT8	DC power input	+13.8V DC (1)	Present when 13.8V DC applied to radiotelephone
9	S1/TT9	Transmitter DC power buss	+13.8V DC (1)	Present in transmit mode only

(1) Use 0-25V DC meter or Test Set.

(2) Use

The circuit parameters may be measured or monitored with the SCC Metering and Functional Test Panel (refer to Paragraph 2.b), or on a 0-50 uA DC meter connected between the appropriate pin and chassis ground. The only exceptions are the FM detector output (which requires a 25-0-25 uA DC meter to properly indicate the detector crossover adjustment), and the +13.8V DC power measurements.

(3) Functions

The circuit parameters, their functions in troubleshooting and/or alignment, and the nominal meter indications for proper operation, are tabulated in Tables 3-2 (receiver) and 3-3 (transmitter).

c. Troubleshooting Procedures - Unit on Test Bench

(1) Initial Checkout

The following procedure may be employed to localize a malfunction within the equipment to a particular section, or as an overall performance check during routine maintenance.

(a) Supply Voltage Check

Check the supply voltage under load prior to making any performance checks, or adjustments to the radiotelephone. Perform the supply voltage checks as follows:

1) Set switch "S1" on the Metering and Functional Test Panel (Item 3, Table 3-1) to "TT8" or "RT8", or connect a 0-25V DC meter between pins "8" (positive) and "1" (ground/negative) on either test receptacle.

2) Connect the RF Wattmeter (Item 5, Table 3-1), or a suitable 50-ohm dummy load, to the ANT receptacle.

CAUTION

Avoid keying the transmitter unless an antenna, output wattmeter, or dummy load is connected to the ANT receptacle. Protective circuitry is provided, however it is poor practice as damage may occasionally occur.

3) Apply power to the unit and key the transmitter (with the "KEY" switch on the Metering and Functional Test Panel, or by pressing the push-to-talk button on the microphone) and measure the supply voltage on the meter: The nominal supply voltage is 13.8 volts. The minimum voltage is 12, and the maximum is 16.0 volts DC.

NOTE

If the measured voltage is below 12, or above 16 volts, do not continue testing. Although operation is possible at other input voltages, the performance will be severely degraded and any further checkout procedures will be meaningless. Adjust the supply voltage to 13.8 volts DC if possible.

(b) Transmitter Performance Check

If the supply voltage check of subparagraph "(a)" is satisfactory, conduct the transmitter performance check as follows:

NOTE

The following limits apply at 13.8V DC input voltage.

1) Connect the RF Wattmeter to the ANT receptacle.

2) Apply power to the unit and key the transmitter: The indicated power output on the wattmeter should be 8.0 watts minimum, indicating proper operation of the RF stages in the transmitter.

NOTE

It may be necessary to retune the output circuit slightly to match the 50-ohm load. Refer to Paragraph 6.b(2) for the adjustment procedure.

3) If the required power output cannot be obtained in the preceeding step, perform the transmitter alignment procedure of Paragraph 6.b(2).

(c) Receiver Performance Check

Proper receiver performance may be confirmed by checking the 20 dB quieting sensitivity and squelch sensitivity as follows:

1) Connect the FM Signal Generator (Item 2, Table 3-1) RF output to the ANT receptacle and the VTVM (Item 6, Table 3-1) between pins "7" and "1" on the receiver test receptacle, or to the AUDIO TEST receptacle on the Test Set: Set the VTVM to read AC volts.

2) Apply power to the unit, and set the SQL control for maximum "noise".

3) With no signal input, observe the "noise voltage" output on the VTVM.

4) Set the FM Signal Generator to the proper frequency and adjust the amplitude until the "noise voltage" on the VTVM drops to 1/10 of the reading (20 dB decrease) observed in step "3)": The FM Signal Generator output amplitude should be 0.8 microvolt maximum.

5) With no signal input, adjust the SQL control until the speaker "noise" just cuts out (squelch threshold) then apply signal and adjust the FM Signal Generator output until speaker "noise" is heard: The FM Signal Generator output amplitude should be 0.5 microvolt maximum.

6) If the required 20 dB quieting and squelch sensitivity cannot be obtained in any of the preceeding steps, perform the receiver alignment procedures of Paragraph 6. a(2).

(2) Signal Tracing

Conventional signal tracing techniques can be utilized to isolate a fault within a particular circuit of the receiver or transmitter once an abnormal indication is observed at a test receptacle pin. An oscilloscope provides the simplest method of such signal tracing, as a circuit malfunction will be immediately apparent.

(3) Voltage and Resistance Measurements

Once the malfunction has been isolated to a particular circuit, voltage and resistance measurements may be used to isolate a defective component. Reference to the schematic diagrams and circuit board layouts in Section IV will assist in this operation.

5. CIRCUIT BOARD REMOVAL AND REPLACEMENT

Disconnect all cables and remove the unit from the case, then proceed as directed in the following subparagraphs.

a. Receiver Circuit Board

(1) Removal

Remove the receiver printed circuit board as follows:

(a) Remove the four nylon cable ties on the receiver wiring harness.

(b) Remove the four self-tapping screws securing the receiver printed circuit board to the chassis.

(c) Separate the receiver printed circuit board from

the chassis, and disconnect all leads to the receiver wiring harness, coaxial cable, and panel controls.

NOTE

If the unit is equipped with an SR-CTN1L tone squelch board, unsolder the blue lead from the top of R76 and the purple lead from the top of R84 on the receiver printed circuit board.

(2) Replacement

Replace the receiver printed circuit board as follows (refer to Figure 4-1 for chassis interwiring):

(a) Connect the orange lead from pin 3 (RT3) of the receiver test receptacle to terminal P20 on the circuit board.

(b) Connect the orange lead from pin 9 (TT9) of the transmitter test receptacle to terminal P7 on the circuit board.

(c) Connect the red lead from pin 9 (RT9) of the receiver test receptacle to terminal P5 on the circuit board.

(d) Connect the VOL control (R65) cable shield to terminal P9, white lead to terminal P6, and red lead to terminal P8 on the circuit board.

(e) Connect the SQL control (R74) cable shield to terminal P4, white lead to terminal P11, and red lead to terminal P10 on the circuit board.

(f) Connect the brown lead from pin 6 (RT6) of the receiver test receptacle to terminal P3 on the circuit board.

(g) Connect the green lead from pin 2 (RT2) of the receiver test receptacle to terminal P2 on the circuit board.

(h) Connect the green lead from pin 4 (RT4) of the receiver test receptacle to terminal P1 on the circuit board.

(i) Connect the black lead from the SPKR receptacle to terminal P13 and the white lead to terminal P16 on the circuit board.

(j) Connect the red lead from inductor L322 to terminal P12 on the circuit board.

(k) Connect the coaxial cable from the transmitter, shield to terminal P17, and center conductor to terminal P18, on the circuit board.

NOTE

If the unit is equipped with an SR-CTN1L tone squelch board, solder the blue lead (from P8 on the SR-CTN1L board) to the top of R76, and the purple lead (from P2 on the SR-CTN1L board) to the top of R84, on the receiver printed circuit board.

(l) Attach the receiver printed circuit board to the chassis, securing with the four self-tapping screws.

(m) Install the four nylon cable ties on the receiver wiring harness.

NOTE

Three of the cable ties should be inserted through the appropriate holes in the shield partition on the receiver printed circuit board to hold the wiring harness in the proper position.

b. Transmitter Circuit Board

(1) Removal

Remove the transmitter printed circuit board as follows:

(a) Remove the nylon cable tie on the wiring harness.

(b) Remove the six self-tapping screws securing the transmitter printed circuit board to the chassis.

(c) Separate the transmitter printed circuit board from the chassis, and disconnect all leads to the transmitter wiring harness, coaxial cables, and panel controls.

NOTE

If the unit is equipped with an SR-CTN1L tone squelch board, unsolder the green lead from the top of R360 on the transmitter printed circuit board.

(2) Replacement

Replace the transmitter printed circuit board as follows (refer to Figure 4-1 for chassis interwiring):

(a) Connect the orange and white lead from pin 8 (TT8) of the transmitter test receptacle to terminal P47 on the circuit board.

(b) Connect the red lead from pin 9 (TT9) of the transmitter test receptacle to terminal P46 on the circuit board.

(c) Connect the red lead from pin 9 (RT9) of the receiver test receptacle to terminal P44 on the circuit board.

(d) Connect the red lead from inductor L322 to terminal P43 on the circuit board.

(e) Connect the black lead from the MIC receptacle to terminal P50 on the circuit board.

(f) Connect the orange lead from pin 4 (TT4) of the transmitter test receptacle to terminal P35 on the circuit board.

(g) Connect the green lead from pin 3 (TT3) of the transmitter test receptacle to terminal P34 on the circuit board.

(h) Connect the yellow lead from pin 2 (TT2) of the transmitter test receptacle to terminal P33 on the circuit board.

(i) Connect the coaxial cable from the receiver, shield to terminal P42, and center conductor to terminal P38, on the circuit board.

(j) Connect the coaxial cable from the ANT receptacle, shield to terminal P41, and center conductor to terminal P40, on the circuit board.

(k) Connect the cable from the MIC receptacle, shield to terminal P49, and grey lead to terminal P48, on the circuit board.

(l) Connect the red lead from capacitor C373 to terminal P51 on the circuit board.

NOTE

If the unit is equipped with an SR-CTN1L tone squelch board, solder the green lead (from P3 on the SR-CTN1L board) to the top of R360 on the transmitter printed circuit board.

(m) Attach the transmitter printed circuit board to the chassis, securing with the six self-tapping screws.

(n) Install the nylon cable tie on the wiring harness.

c. Tone Squelch Circuit Board

(1) Removal

Remove the tone squelch printed circuit board as follows:

(a) Remove the two machine screws and one self-tapping screw securing the tone squelch printed circuit board to the chassis.

(b) Separate the tone squelch printed circuit board from the chassis, and disconnect all leads to the wiring harness.

NOTE

On some SR-CTN1L tone squelch boards, the blue lead is soldered directly to diode D11, rather than employing a connector (P8), and the orange lead is soldered to terminal P5.

(2) Replacement

Replace the tone squelch printed circuit board as follows (refer to Figure 4-1 for chassis interwiring):

(a) Connect the black lead from pin 1 (RT1) of the receiver test receptacle to terminal P6 on the circuit board.

(b) Connect the white lead from pin 6 (RT6) of the receiver test receptacle to terminal P1 on the circuit board.

(c) Connect the blue lead from R76 to terminal P8 on the circuit board (or solder to diode D11, as required).

(d) Connect the red lead from pin 9 (TT9) of the transmitter test receptacle to terminal P4 on the circuit board.

(e) Connect the purple lead from R84 to terminal P2 on the circuit board.

(f) Connect the green lead from R360 to terminal P3 on the circuit board.

(g) Connect the yellow lead from the TONE switch to terminal P7 on the circuit board.

(h) Connect (or solder, as required) the orange lead from pin 9 (RT9) of the receiver test receptacle to terminal P5 on the circuit board.

(i) Attach the tone squelch printed circuit board to the chassis, securing with the two machine screws to the threaded supports, and one self-tapping screw to the upper left chassis lip (behind and adjacent to the TONE switch).

(3) Installation

To install a SR-CTN1L tone squelch printed circuit board, proceed as follows (refer to Figure 4-1 for chassis interwiring):

(a) Bend the lower left chassis lip (behind and adjacent to the MIC receptacle), and press flat against the chassis.

(b) Install two threaded supports (SCC P/N 1988-10102), in the holes at top and bottom of the chassis, between the VOL and SQL controls.

(c) Unsolder the orange lead at the center terminal of the TONE switch.

(d) Solder a jumper lead from the center terminal of the TONE switch to terminal "1" on the MIC receptacle.

(e) Route the yellow lead from terminal P7 on the tone squelch circuit board through the wedge shaped slot on the board and solder to the lower right hand terminal (viewed from the top) of the TONE switch.

(f) Attach the tone squelch circuit board to the chassis, securing with two machine screws to the threaded supports, and one self-tapping screw to the upper left chassis lip (behind and adjacent to the TONE switch).

NOTE

The wiring harness to the front panel should pass through the wedge shaped slot in the tone squelch circuit board.

(g) Bend the cable retaining clip on the chassis (closest to the tone squelch circuit board) and remove the two nylon cable ties on the wiring harness adjacent to the vinyl sleeving.

(h) Route the remaining leads with the wiring harness (through the retaining clip): Bend the clip back to secure the wiring.

(i) Route the black, white, red, and green leads from the tone squelch circuit board through the vinyl sleeving with the wiring harness.

(j) Solder the black lead from terminal P6 on the circuit board to terminal 1 (RT1) of the receiver test receptacle.

(k) Solder the white lead from terminal P1 on the circuit board to terminal 6 (RT6) of the receiver test receptacle.

(l) Solder the red lead from terminal P4 on the circuit board to terminal 9 (TT9) of the transmitter test receptacle.

(m) Solder the green lead from terminal P3 on the circuit board to the top of R360 on the transmitter printed circuit board.

(n) Solder the blue lead from terminal P8 on the circuit board to the top of R76 on the receiver printed circuit board.

(o) Solder the purple lead from terminal P2 on the circuit board to the top of R84 on the receiver printed circuit board.

(p) Solder the orange lead from step "(c)" to terminal P5 on the circuit board.

(q) Replace the two nylon cable ties on the wiring harness.

6. ALIGNMENT

a. Receiver

If the receiver does not meet the required performance specifications during the checks of Paragraph 4. c(1)(c), realignment may be performed in accordance with the procedure in the following subparagraphs.

(1) Connection to Test Equipment

Interconnect the test equipment and the unit to be aligned as follows:

(a) If the receiver printed circuit board has been removed from the unit it may be aligned in the Circuit Board Test Fixture (Item 4, Table 3-1): Install the receiver printed circuit board in the test fixture, securing with four screws, and connect the receiver test leads to the proper terminals on the circuit board.

NOTE

The receiver test leads are color coded identical to the receiver wiring harness in the unit. Refer to Paragraph 5.a(2) for the proper connection sequence.

(b) Connect the RECEIVER test cable from the Metering and Functional Test Panel (Item 3, Table 3-1) to the RT receptacle on the unit, or to the Circuit Board Test Fixture.

(c) Connect the power cable from the unit to the Metering and Functional Test Panel, and connect to the 13.8 volt DC Power Source (Item 9, Table 3-1).

(2) Alignment Procedure

Align the receiver tuned circuits as follows:

(a) Apply DC power to the Metering and Functional Test Panel and the unit.

(b) Connect the FM Signal Generator (Item 2, Table 3-1) IF output to the receiver second IF stage.

NOTE

Ground the coaxial cable shield to the shielding partition on the receiver circuit board, and proximity couple the center conductor to the 455 kHz filter, L20 and L21.

(c) Adjust the FM Signal Generator to provide an approximate 100 uV output at 455 kHz (±10 Hz).

NOTE

If the Metering and Functional Test Panel is not being used, connect a 25-0-25 uA DC meter between pins "1" and "6" of the receiver test receptacle.

(d) Using the slug adjustment tool (Item 10, Table 3-1), adjust the core in inductor L17 (blue) until M3, or the separate 25-0-25 uA DC meter indicates "zero".

CAUTION

Exercise extreme care in adjusting all inductors. The inner cores are extremely brittle, and are secured with paint. Apply a small drop of acetone to soften the paint prior to making adjustments.

(e) Disconnect the FM Signal Generator from the receiver second IF stage, and connect the RF output to the ANT receptacle of the unit, or the test fixture: Adjust the Signal Generator to provide a 0.5 volt output at the proper input frequency; ±3.5 kHz deviation.

(f) Set switch "S2" on the Test Set to "RT2" and sequentially adjust the cores in inductors L1, and L3 thru L16, to obtain maximum response on M4, or the separate 0-50 uA DC meter.

(g) Set switch "S2" on the Test Set to "RT3" and sequentially adjust the cores in inductors L12 thru L15 to obtain maximum response on M4, or the separate 0-50 uA DC meter.

(h) Reduce the Signal Generator output to 0.5 uV.

(i) Set switch "S2" on the Test Set to "RT4" and sequentially adjust the cores in inductors L7 thru L10 to obtain maximum response on M4, or the separate 0-50 uA DC meter.

NOTE

The following steps cannot be performed with the receiver circuit board installed in the test fixture. Reinstall the board in the radiotelephone in accordance with the instructions of Paragraph 5.a(2), then perform the first LO crystal adjustments that follow.

(j) Disconnect the FM Signal Generator from the ANT receptacle, and connect the FM Communications Monitor (Item 1, Table 3-1) SIGNAL GEN OUT output in its place.

NOTE

If the Metering and Functional Test Panel is not used, connect a 25-0-25 uA DC meter between pins "1" and "6" of the receiver test receptacle.

(k) Adjust the FM Communications Monitor to provide a 10 mV output at the exact desired frequency.

(l) Using the trimmer adjustment tool (Item 11, Table 3-1), adjust the crystal trimmer capacitor, C20, until M3, or the separate 25-0-25 uA DC meter indicates at "zero".

(m) Following completion of the receiver alignment procedures, repeat the receiver performance check in accordance with the instructions of Paragraph 4.c(1)(c) to verify the 20 dB quieting and squelch sensitivities.

b. Transmitter

If the transmitter does not meet the required performance specifications during the checks of Paragraph 4.c(1)(b), realignment may be performed in accordance with the procedure in the following subparagraphs.

(1) Connection to Test Equipment

Interconnect the test equipment and the unit to be aligned as follows:

(a) If the transmitter printed circuit board has been removed from the unit, it may be aligned in the Circuit Board Test Fixture (Item 4, Table 3-1): Install the transmitter printed circuit board in the test fixture, securing with four screws, and connect the transmitter test leads to the proper terminals on the circuit board.

NOTE

The transmitter test leads are color coded identiacl to the transmitter wiring harness in the unit. Refer to Paragraph 5.b(2) for the proper connection sequence.

(b) Connect the TRANSMITTER test cable from the Metering and Functional Test Panel (Item 3, Table 3-1) to the TT receptacle on the unit, or to the Circuit Board Test Fixture.

(c) Connect the power cable from the unit to the Metering and Functional Test Panel, and connect to the 13.8V DC Power Source (Item 9, Table 3-1).

(d) Connect the RF Wattmeter (Item 5, Table 3-1) to the ANT receptacle of the unit, or the test fixture.

(2) RF Circuit Alignment Procedure

Align the transmitter RF circuits as follows:

(a) Apply DC power to the Metering and Functional Test Panel and the unit.

(b) Using the slug adjustment tool (Item 10, Table 3-1) and the trimmer adjustment tool (Item 11, Table 3-1), adjust the transmitter RF stages in the sequence given in Table 3-4: Key the transmitter (with the "KEY" switch on the Metering and Functional Test Panel, or by pressing the push-to-talk button on the microphone), and make the adjustments in each step to obtain maximum response on M4, or the separate 0-50 uA DC meter.

TABLE 3-4. TRANSMITTER RF ALIGNMENT PROCEDURE

STEP	METER SWITCH POSITION	PROCEDURE
1	S2/TT2	Sequentially adjust the cores in L302 and L303 for maximum response on the meter
2a	S2/TT3	Sequentially adjust the cores in L304 and L305 for maximum response on the meter
2b	S2/TT3	Readjust L302 and L303 as required for maximum response on the meter
3	S2/TT4	Using the plastic tweezer (Item 12, Table 3-1) carefully adjust the spacing between turns of L306 and L307 for maximum response on the meter (NOTE 1)
4	- - -	Carefully adjust the spacing between turns of L308 for maximum response on the RF Wattmeter
5a	- - -	Remove the cover of the shielded compartment on the transmitter circuit board
5b	- - -	Carefully adjust the spacing between turns of L309 and L310 for maximum response on the RF Wattmeter
5c	- - -	Carefully adjust the spacing between turns of L312 thru L317, and adjust C333 for maximum response on the RF Wattmeter
5d	- - -	Readjust L304, L317, and C333 as required for maximum response on the RF Wattmeter

NOTES:

1) Make these adjustments alternately as interaction exists: Make all adjustments in small increments (spread the turns to increase frequency, and squeeze together to decrease).

CAUTION

Exercise extreme care in adjusting slug-tuned inductors. The inner cores are extremely brittle, and are secured with paint. Apply a small drop of acetone to soften the paint prior to making adjustments.

(3) FCC Limit Verification

The preceeding alignment may adversely affect the harmonic and spurious emission rejection of the transmitter tuned circuits. Perform the following tests to assure that these emissions are within FCC limits:

(a) Connect the transmitter output through the Directional Coupler (Item 8, Table 3-1) to the RF Wattmeter, and connect the RF INPUT of the Field Intensity Meter (Item 7, Table 3-1) to the Model 4274 element on the coupler.

(b) Key the transmitter and adjust the Field Intensity Meter (or suitable substitute) to obtain a "zero" carrier reference level (approximately 50 mV) at the fundamental output frequency.

(c) Adjust the Field Intensity Meter as required and check that the 17th and 19th harmonics of the crystal oscillator frequency are at least 50 dB below the reference level of step "(b)": If the response is less than 50 dB below the reference level, readjust L302 thru L305 slightly until the rejection exceeds the 50 dB FCC minimum.

NOTE

Check that the transmitter power output indicated on the RF Wattmeter does not decrease while readjusting L302 thru L305.

(d) Adjust the Field Intensity Meter to the second harmonic of the output frequency and check that the second harmonic is at least 50 dB below the reference level of step "(b)": If the response is less than 50 dB below the reference level, readjust C333,

and L309 thru L317, slightly until the rejection exceeds the 50 dB FCC minimum.

NOTE

Check that the transmitter power output indicated on the RF Wattmeter does not decrease while readjusting C333, and L309 thru L317.

(4) Crystal Trimmer Adjustment

Adjust the crystal trimmer capacitor as follows:

NOTE

The following steps cannot be performed with the transmitter circuit board installed in the test fixture. Reinstall the board in the radiotelephone in accordance with the instructions of Paragraph 5.b(2), then perform the transmitter crystal adjustment that follows.

(a) Adjust the FM Communications Monitor (Item 1, Table 3-1) as required to indicate the transmitter frequency.

(b) Using the trimmer adjustment tool (Item 11, Table 3-1), adjust the crystal trimmer capacitor, C536, until the desired frequency (±250 Hz or less) is indicated by the FM Communications Monitor.

NOTE

Do not modulate the transmitter during these adjustments: FCC requirements are that the transmitter frequency be within ±0.0005% (or ±750 Hz).

(c) Following completion of the transmitter alignment procedures, repeat the transmitter performance check in accordance with the instructions of Paragraph 4.c(1)(b) to verify that the RF output meets the requirements.

(5) Deviation Adjustment Procedure

Adjust the transmitter deviation as follows:

NOTE

Correct setting of the transmitter deviation is essential to obtain optimum performance from the radiotelephone. Excessive deviation (greater than ±5.0 kHz) is in violation of FCC regulations, and produces interference on adjacent channels. Insufficient deviation will degrade operation, reducing the communications range.

(a) Apply DC power to the Metering and Functional Test Panel and the unit.

(b) Adjust the FM Communications Monitor to indicate the transmitter deviation.

(c) Connect the 1000 Hz audio output of the FM Signal Generator (Item 2, Table 3-1) to the test fixture.

NOTE

If the transmitter deviation is adjusted with the circuit board installed in the unit, connect the 1000 Hz audio signal between pins "1" (hot) and "2" (ground) of the MIC receptacle.

(d) Adjust the FM Signal Generator audio output level to 30 mV.

(e) Key the transmitter and adjust the IDC potentiometer, R351, to obtain a ±4.5 kHz deviation displayed on the FM Communications Monitor.

(f) Reduce the FM Signal Generator output level to 8 mV and key the transmitter: Check that essentially full deviation is displayed on the FM Communications Monitor.

NOTE

If the deviation in step "(f)" is less than 2/3 of the deviation in step "(e)", insufficient audio gain is indicated: Check voltage levels in the audio circuit, and transistors Q42 thru Q44.

(g) Key the transmitter and readjust the FM Signal Generator output level to produce 2/3 of rated deviation (approximately ±3 to 3.5 kHz).

(h) Increase the FM Signal Generator output level 20 dB above that of step "(g)" and key the transmitter: Check that the deviation does not exceed ±4.5 to 5 kHz.

c. Tone Squelch

(1) Encoder and Decoder Tests

(a) Encoder Test

1) Connect the TRANSMITTER test cable from the Metering and Functional Test Panel (Item 3, Table 3-1) to the TT receptacle on the unit.

2) Connect the power cable from the unit to the Metering and Functional Test Panel, and connect to the 13.8V DC Power Source (Item 9, Table 3-1).

3) Connect the RF Wattmeter (Item 5, Table 3-1) to the ANT receptacle of the unit.

4) Apply DC power to the Metering and Functional Test Panel and the unit.

5) Adjust the FM Communications Monitor (Item 1, Table 3-1) to indicate the transmitter deviation.

6) Key the transmitter (with the "KEY" switch on the Metering and Functional Test Panel, or by pressing the push-to-talk button on the microphone) and observe the deviation displayed on the FM Communications Monitor: Check that the deviation exceeds ±700 Hz in less than one second after the transmitter is keyed.

NOTE

The deviation should be ±700 to ±800 Hz after stabilization.

7) Connect the Digital Frequency Meter (Item 14, Table 3-1) to terminals P3 (audio out) and P6 (ground) on the tone squelch circuit board and key the transmitter: Check that the encoding frequency is within ±0.1% of the frequency marked on the resonant reed.

8) If the required deviation cannot be obtained in the preceeding steps, perform the encoder deviation adjustment procedure of Paragraph 6.c(2).

(b) Decoder Test

1) Connect the RECEIVER test cable from the Metering and Functional Test Panel to the RT receptacle on the unit: Adjust the receiver for normal operation in the "Private Channel" mode.

2) Connect the output of the Audio Oscillator (Item 13, Table 3-1) to the EXT MOD input of the FM Signal Generator (Item 2, Table 3-1): Connect the Digital Frequency Meter to monitor the Audio Oscillator frequency.

3) Adjust the FM Signal Generator to provide approximately 5 uV output at the proper input frequency and adjust the Audio Oscillator to provide ±700 Hz deviation at the exact frequency marked on the resonant reed (±0.1%).

4) Set the FM Signal Generator modulation to CW and connect the RF output to the ANT receptacle of the unit.

5) Switch the FM Signal Generator modulation to EXT and check that the receiver decoder activates the audio output within one second.

6) If the required decoding activation cannot be obtained in the preceeding steps, perform the decoder sensitivity adjustment procedure of Paragraph 6. c(3).

(2) Encoder Deviation Adjustment

If the tone squelch does not meet the required performance specifications during the checks of Paragraph 6. c(1)(a), readjustment may be performed in accordance with the following procedure:

(a) Connect and adjust the transmitter and test equipment as described in steps "1)" thru "5)" of Paragraph 6. c(1)(a).

(b) Disconnect the microphone from the Metering and Functional Test Panel (or unit) to prevent the possibility of modulating the transmitter with a signal other than the encoder.

(c) Key the transmitter with the "KEY" switch on the Metering and Functional Test Panel and adjust the deviation potentiometer, R14, on the tone squelch board, until a deviation of ±700 to ±800 Hz is displayed on the FM Communications Monitor.

(d) Key the transmitter several times to ensure that the deviation potentiometer is properly set.

(3) Decoder Sensitivity Adjustment

If the tone squelch does not meet the required performance specifications during the checks of Paragraph 6. c(1)(b), readjustment may be performed in accordance with the following procedure:

(a) Connect and adjust the receiver and test equipment as described in steps "1)" and "2)" of Paragraph 6.c(1)(b): Reconnect the microphone to the Test Panel and set the M3 switch to the "OFF" position to prevent loading the FM detector output with the 25-0-25 uA DC meter.

(b) Adjust the FM Signal Generator output level to obtain the 20 dB quieting (approximately 0.5 uV, refer to Paragraph 1.4.c(1)(c) for procedure).

(c) Modulate the FM Signal Generator with a 1000 Hz tone, and adjust the modulation level to obtain ±3.5 kHz deviation.

(d) With the TONE switch in the OFF position, adjust the VOL potentiometer, R65, for a normal listening level (approximately 3 volts RMS at the AUDIO OUT receptacle of the Test Panel.

(e) Adjust the Audio Oscillator to provide ±400 to ±500 Hz deviation at the exact frequency marked on the resonant reed, and actuate the "Private Channel" by grounding the microphone hanger plate on the back of the microphone: Set the TONE switch to the ON position.

(f) Decrease the Audio Oscillator output until the FM Signal Generator deviation becomes "zero", then slowly increase the deviation until the tone squelch decoder actuates and the receiver audio channel is "opened": Check that the audio channel is "opened" by a deviation between ±400 and ±500 Hz.

(g) If the "Private Channel" actuates at a deviation below ±400 Hz in step "(f)", decrease the value of R30 on the tone squelch circuit board.

NOTE

This may be accomplished by paralleling resistors to obtain the desired value if the appropriate resistor is not available.

(h) If the "Private Channel" does not actuate below a deviation of ±500 Hz in step "(f)", increase the value of R30 as required.

(i) After adjusting the value of R30, verify normal decoder operation by increasing the deviation to the point of actuation several times.

(j) Decrease the FM Signal Generator output 6 dB from the 20 dB quieting level of step "(b)" and check that the tone squelch de-actuates the audio channel at a deviation of ±500 Hz: Adjust the value of R30 as required so that the deviation and RF sensitivity requirements can be simultaneously satisfied.

NOTE

The above procedure sets the tone squelch at the proper decoding level, while preventing noise or excess vibration triggering due to a "too high" sensitivity.

7. CHANGING OPERATING FREQUENCIES

Changing operating frequencies in the Model SR-C803L requires changing the transmitter and receiver first local oscillator crystals, and retuning the transmitter and receiver to the new frequency.

a. Ordering Crystals

In ordering crystals for the SR-C803L, specify the desired operating frequency, not the fundamental crystal frequency. Order the appropriate crystals as follows:

(1) Transmitter

The transmitter crystal is a SCC type SR-CTX-1L;

i.e., for operation on a frequency of 151.98 MHz, order a "151.98 MHz SR-CTX-1L".

(2) Receiver

The receiver crystal is a SCC type SR-CRX-1L; i.e., for operation on a frequency of 151.98 MHz, order a "151.98 MHz SR-CRX-1L".

b. Changing Crystals

Change the transmitter and receiver crystals as follows:

(1) Remove the unit from the case.

(2) Remove the transmitter crystal, Y301, and install the new SR-CTX-1L crystal in its place.

(3) Remove the receiver first local oscillator crystal, Y1 (located adjacent to the audio output transformer, P/N TO1350601), and install the new SR-CRX-1L crystal in its place.

c. Retuning

Retune the transmitter and receiver circuits as described in the alignment procedures of Paragraph 6.

NOTE

A large change in operating frequency may be beyond the range of adjustment provided by the inner cores (slugs) in the inductors. In this case, the associated fixed capacitors must be changed to resonate the tuned circuits to the new operating frequency. The design center frequency capacitor values for frequencies between 144.00 and 174.00 MHz are given in Table 4-1. Change the appropriate capacitor to the value given if the inductor cannot be resonated at the required frequency. A capacitor kit, SCC P/N SR-SPK6, is available. This kit contains five of each capacitor value required.

8. REPAIR

a. Printed Circuit Boards

The printed circuit boards used in the Model SR-C803L radiotelephone consist of a phenolic base to support the components, with an etched copper foil on the bottom providing the necessary interconnections. In addition, the transmitter and receiver boards have a second foil on the top, or component side of the board. This second foil provides a shielding effect similar to a conventional metal chassis.

NOTE

The areas where solder is not required have been screened with a solder resistant green ink. This prevents solder from adhering to these surfaces.

(1) Precautions

The phenolic base is designed to withstand extensive vibration and shock when the circuit board is mounted in the unit. However, as the base is thin, typically 1/16 inch, it must be handled with care when removing or installing a board in the unit, or while replacing components on the service bench.

(2) Inspection

The first step in servicing a printed circuit board is inspect the board carefully under a strong magnifying glass for physical damage; i.e., cracks in the base or foil, broken components, or leads, etc.

(3) Board Repair

If the inspection reveals a damaged board or component, employ the following procedure to repair the board or replace a component.

(a) Broken Foil:

1) If the break is large, place a short length of copper wire across the break and solder the ends to the broken foil.

2) If the break is small, try flowing solder across the break.

CAUTION

Do not apply excessive heat, or allow solder to flow to other parts of the foil.

(b) Removal of Components or Leads:

1) Use a soldering aid to manipulate wires.

2) Use heatsinks to protect nearby components and heat connections only until wires loosen.

3) Remove leads quickly (but carefully).

4) Remove excess solder before it hardens (use a solder sucker).

(c) Installation of Components:

1) Inspect board to verify that it is clean and dry.

2) Install heatsinks to protect components.

3) Trim component leads to approximate length required and solder in place. Use sufficient heat to assure a good connection, but avoid excessive heat.

4) Trim the leads on the reverse side of the board close to the solder joint and clean excess solder and rosin from connection.

b. Removal and Replacement of Front Panel

If the front panel is damaged, or the MIC receptacle is to be replaced the panel subassembly must be disassembled.

(1) Disassembly

Disassemble the front panel as follows:

(a) Remove the VOL and SQL knobs.

(b) Remove the four self-tapping screws securing the panel subassembly to the chassis.

(c) Press back on the VOL and SQL control shafts to separate the panel subassembly from the chassis.

(d) Unsolder the leads from the MIC receptacle.

(e) Remove the five machine screws securing the panel to the frame of the subassembly.

(f) Remove the nut and gasket securing the MIC receptacle to the panel.

(2) Reassembly

Reassemble the front panel as follows:

(a) Install the MIC receptacle and gasket on the panel, securing with the nut.

NOTE

Insure that the gasket seats correctly to effect a proper seal.

(b) Install the panel in the frame subassembly, securing with the five machine screws.

(c) Solder the white lead to terminal "4" on the MIC receptacle.

(d) Solder the black lead to terminal "3" on the MIC receptacle.

(e) Solder the cable shield to terminal "2" and the grey lead to terminal "1" on the MIC receptacle.

(f) Install the panel subassembly over the chassis, securing with the four self-tapping screws.

NOTE

Be sure to replace the two nylon spacers between the panel subassembly and the chassis, adjacent to the "transmit" indicator lamp.

(g) Install the VOL and SQL control knobs, and replace the unit in the case.

PARTS LIST - MAIN CHASSIS (Figure 4-1)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C373	EA1080161	CAPACITOR, FIXED, ELECTROLYTIC: 1000 uf; 16V DC
D35	HD2000110	SEMICONDUCTOR DEVICE, DIODE: Silicon zener
F1	FS1020001	FUSE: 2 ampere; 3AG
L322	LC2106001	INDUCTOR, POWER: 10 mH
PL1	IN1012003	LAMP, INCADESCENT: 12V
PL2		Same as PL1
R65	RK1103008	RESISTOR, VARIABLE, COMPOSITION: 10,000 ohms, with switch (VOL control)
R74	RK0502003	RESISTOR, VARIABLE, COMPOSITION: 5000 ohms (SQL control)
S1	SC0202006	SWITCH, TOGGLE: DPDT (TONE)

PARTS LIST - RECEIVER (Figure 4-2)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C1	DD1630001	CAPACITOR, FIXED, CERAMIC: 30 pf; ±10%
C2	DD1210001	CAPACITOR, FIXED, CERAMIC: 10 pf; ±1%

PARTS LIST - RECEIVER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C3	DK1710201	CAPACITOR, FIXED, CERAMIC: 0.001 uf; ±20%
C4		Same as C3
C5		Same as C1
C6		Same as C2
C7 and C8		Same as C3
C9	DD1600801	CAPACITOR, FIXED, CERAMIC: 0.8 pf; ±10%
C10	DK1750201	CAPACITOR, FIXED, CERAMIC: 0.005 uf; ±20%
C11		CAPACITOR, FIXED, CERAMIC: Listed for reference only (refer to Table 4-1)
C12		Same as C3
C13 and C14		Same as C10
C15		Same as C9
C16	DK1710301	CAPACITOR, FIXED, CERAMIC: 0.01 uf; ±20%
C17		Same as C3

PARTS LIST - RECEIVER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C18		CAPACITOR, FIXED, CERAMIC: Listed for reference only (refer to Table 4-1)
C19		Not used
C20		Same as C3
C21		Same as C16
C22	DD1600601	CAPACITOR, FIXED, CERAMIC: 0.6 pf; ±10%
C23	DD1620101	CAPACITOR, FIXED, CERAMIC: 200 pf; ±10%
C24	DD1610101	CAPACITOR, FIXED, CERAMIC: 100 pf; ±10%
C25		Same as C9
C26 and C27		Same as C16
C28		Same as C22
C29		Same as C2
C30		Same as C10
C31	DF1710401	CAPACITOR, FIXED, FILM: 0.1 uf; ±20%
C32	DK1850301	CAPACITOR, FIXED, CERAMIC: 0.05 uf; +100%, -0

PARTS LIST - RECEIVER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C33	DK1647101	CAPACITOR, FIXED, CERAMIC: 470 pf; ±10%
C34	DF1747201	CAPACITOR, FIXED, FILM: 0.005 uf; ±20%
C35		Same as C33
C36	DD1616101	CAPACITOR, FIXED, CERAMIC: 160 pf; ±10%
C37		Same as C33
C38		Same as C3
C39	DD1205001	CAPACITOR, FIXED, CERAMIC: 5 pf; ±1 pf
C40	DF3610102	CAPACITOR, FIXED, MICA: 100 pf; ±10%
C41		Same as C1
C42	DF3651001	CAPACITOR, FIXED, MICA: 51 pf; ±10%
C43	DF3620102	CAPACITOR, FIXED, MICA: 200 pf; ±10%
C44		Same as C16
C45	DD1620001	CAPACITOR, FIXED, CERAMIC: 20 pf; ±10%
C46		Same as C16

PARTS LIST - RECEIVER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C47	DD1102001	CAPACITOR, FIXED, CERAMIC: 2 pf; ±0.5 pf
C48	DD1103001	CAPACITOR, FIXED, CERAMIC: 3 pf; ±0.5 pf
C49		Same as C16
C50		Same as C22
C51		Same as C10
C52		CAPACITOR, FIXED, MICA: Listed for reference only (refer to Table 4-1)
C53		Same as C3
C54		Same as C22
C55		Same as C3
C56		Same as C10
C57 thru C59		Same as C31
C60	DF1740303	CAPACITOR, FIXED, FILM: 0.04 uf; ±20%
C61		Same as C3
C62		Same as C42

PARTS LIST - RECEIVER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C63	DD1660001	CAPACITOR, FIXED, CERAMIC: 60 pf; ±10%
C64		Same as C23
C65		Same as C16
C66		Same as C3
C67	DF1733302	CAPACITOR, FIXED, FILM: 0.03 uf; ±20%
C68		Same as C36
C69		Same as C34
C70		Same as C33
C71		Same as C34
C72		Same as C33
C73		Same as C34
C74		Same as C33
C75		Same as C31
C76	DK1633101	CAPACITOR, FIXED, CERAMIC: 330 pf; ±10%
C77		Same as C31
C78		Same as C36

PARTS LIST - RECEIVER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C79	DD1620103	CAPACITOR, FIXED, CERAMIC: 200 pf; ±10%
C80	DD1210004	CAPACITOR, FIXED, CERAMIC: 10 pf; ±10%
C81	DD1650101	CAPACITOR, FIXED, CERAMIC: 500 pf; ±10%
C82		Same as C81
C83	DF1722302	CAPACITOR, FIXED, FILM: 0.02 uf; ±20%
C84	EA4760161	CAPACITOR, FIXED, ELECTROLYTIC: 50 uf; 16V DC
C85		Same as C34
C86	DD2640101	CAPACITOR, FIXED, CERAMIC: 400 pf; ±10%
C87		Same as C40
C88		Same as C31
C89	ED1050102	CAPACITOR, FIXED, ELECTROLYTIC: 1 uf; 10V DC
C90 and C91		Same as C34
C92		Same as C84

PARTS LIST - RECEIVER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C93		Same as C67
C94	DF1710301	CAPACITOR, FIXED, FILM: 0.01 uf; ±20%
C95 and C96		Same as C94
C97		Same as C67
C98		Same as C60
C99		Same as C94
C100		Same as C60
C101		Same as C94
C102	EA1060101	CAPACITOR, FIXED, ELECTROLYTIC: 10 uf; 10V DC
C103		Same as C102
C104		Same as C83
C105		Same as C31
C106	EE4760161	CAPACITOR, FIXED, ELECTROLYTIC: 50 uf; 16V DC
C107		Same as C94
C108	EA3370161	CAPACITOR, FIXED, ELECTROLYTIC: 300 uf; 16V DC

PARTS LIST - RECEIVER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C109	EA3360161	CAPACITOR, FIXED, ELECTROLYTIC: 30 uf; 16V DC
C110	EA4770161	CAPACITOR, FIXED, ELECTROLYTIC: 500 uf; 16V DC
C111		Same as C60
C112	DK1730201	CAPACITOR, FIXED, CERAMIC: 0.003 uf; ±20%
C113		CAPACITOR, FIXED, CERAMIC: Listed for reference only (refer to Table 4-1)
C114		CAPACITOR, FIXED, CERAMIC: Listed for reference only (refer to Table 4-1)
C115		CAPACITOR, FIXED, CERAMIC: Listed for reference only (refer to Table 4-1)
C116		CAPACITOR, FIXED, CERAMIC: Listed for reference only (refer to Table 4-1)
C117		CAPACITOR, FIXED, CERAMIC: Listed for reference only (refer to Table 4-1)
C118		CAPACITOR, FIXED, CERAMIC: Listed for reference only (refer to Table 4-1)

PARTS LIST - RECEIVER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C119		CAPACITOR, FIXED, CERAMIC: Listed for reference only (refer to Table 4-1)
C120	CT1200001	CAPACITOR, VARIABLE: 0-20 pf
C121 thru C149		Not used
C150		Same as C1
D1		Not used
D2	HD1000101	SEMICONDUCTOR DEVICE, DIODE: Germanium
D3	HD2000206	SEMICONDUCTOR DEVICE, DIODE: Silicon
D4		Same as D3
D5 thru D8		Same as D2
D9		Same as D3
D10 and D11		Same as D2
D12	HV0000605	SEMICONDUCTOR DEVICE, DIODE: Diode connected NPN transistor

PARTS LIST - RECEIVER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
D13	HD3000309	SEMICONDUCTOR DEVICE, DIODE: Silicon zener
D14	HT305351B	SEMICONDUCTOR DEVICE, DIODE: Diode connected NPN transistor
L1	LA1018605	INDUCTOR, RADIO FREQUENCY: Antenna input
L2		Not used
L3	LA1018606	INDUCTOR, RADIO FREQUENCY: 1st RF output
L4	LA1018607	INDUCTOR, RADIO FREQUENCY: 2nd RF input
L5	LA1018608	INDUCTOR, RADIO FREQUENCY: 2nd RF output
L6	LA1018610	INDUCTOR, RADIO FREQUENCY: 1st Mixer input
L7	LI1018603	INDUCTOR, RADIO FREQUENCY: 1st Mixer output
L8	LI1018604	INDUCTOR, RADIO FREQUENCY: 1st IF input
L9	LI1018605	INDUCTOR, RADIO FREQUENCY: 1st IF output
L10	LI1018606	INDUCTOR, RADIO FREQUENCY: 2nd Mixer input

PARTS LIST - RECEIVER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
L11		Not used
L12	LA1018603	INDUCTOR, RADIO FREQUENCY: 1st Tripler output
L13	LA1018604	INDUCTOR, RADIO FREQUENCY: 2nd Tripler input
L14	LA1018611	INDUCTOR, RADIO FREQUENCY: 2nd Tripler output
L15	LA1018609	INDUCTOR, RADIO FREQUENCY: 2nd Tripler output
L16	LI1001045	INDUCTOR, RADIO FREQUENCY: FM Detector
L17	LI1001046	INDUCTOR, RADIO FREQUENCY: FM Detector
L18	LC1394001	INDUCTOR, RADIO FREQUENCY: Noise Amplifier input
L19		Same as L18
L20	LI1001622	INDUCTOR, RADIO FREQUENCY: 2nd IF Filter input
L21	LI1001621	INDUCTOR, RADIO FREQUENCY: 2nd IF Filter output
L22		Same as L18
Q1	HF9000110	SEMICONDUCTOR DEVICE, TRANSISTOR: MOSFET

PARTS LIST - RECEIVER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
Q2 and Q3		Same as Q1
Q4	HT305351B	SEMICONDUCTOR DEVICE, TRANSISTOR: NPN silicon
Q5	HT800031B	SEMICONDUCTOR DEVICE, TRANSISTOR: NPN silicon
Q6 and Q7		Same as Q5
Q8	HT800031C	SEMICONDUCTOR DEVICE, TRANSISTOR: NPN silicon
Q9 and Q10		Same as Q8
Q11	HT600011E	SEMICONDUCTOR DEVICE, TRANSISTOR: PNP silicon
Q12		Same as Q8
Q13 and Q14		Not used
Q15 thru Q17		Same as Q5
Q18		Same as Q4

PARTS LIST - RECEIVER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
Q19 thru Q21		Same as Q8
Q22	HT306441B	SEMICONDUCTOR DEVICE, TRANSISTOR: NPN silicon
Q23		Same as Q11
Q24	HT304862A	SEMICONDUCTOR DEVICE, TRANSISTOR: NPN silicon
Q25		Same as Q24
R1	RC1015314	RESISTOR, FIXED, COMPOSITION: 15,000 ohms; ±10%; 1/4 watt
R2		Not used
R3	RC1010114	RESISTOR, FIXED, COMPOSITION: 100 ohms; ±10%; 1/4 watt
R4 and R5		Not used
R6	RC1010314	RESISTOR, FIXED, COMPOSITION: 10,000 ohms; ±10%; 1/4 watt
R7		Same as R3
R8		Same as R6
R9	RC1022314	RESISTOR, FIXED, COMPOSITION: 22,000 ohms; ±10%; 1/4 watt

PARTS LIST - RECEIVER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
R10		Same as R6
R11	RC1056314	RESISTOR, FIXED, COMPOSITION: 56,000 ohms; ±10%; 1/4 watt
R12		Same as R3
R13	RC1015114	RESISTOR, FIXED, COMPOSITION: 150 ohms; ±10%; 1/4 watt
R14	RC1068214	RESISTOR, FIXED, COMPOSITION: 6800 ohms; ±10%; 1/4 watt
R15		Same as R9
R16	RC1022214	RESISTOR, FIXED, COMPOSITION: 2200 ohms; ±10%; 1/4 watt
R17		Same as R16
R18		Same as R14
R19		Same as R9
R20	RC1047214	RESISTOR, FIXED, COMPOSITION: 4700 ohms; ±10%; 1/4 watt
R21	RC1015214	RESISTOR, FIXED, COMPOSITION: 1500 ohms; ±10%; 1/4 watt
R22 and R23		Not used
R24	RC1047314	RESISTOR, FIXED, COMPOSITION: 47,000 ohms; ±10%; 1/4 watt

PARTS LIST - RECEIVER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
R25		Same as R20
R26		Same as R24
R27		Same as R20
R28 and R29		Not used
R30	RC1056214	RESISTOR, FIXED, COMPOSITION: 5600 ohms; ±10%; 1/4 watt
R31		Same as R30
R32	RC1010214	RESISTOR, FIXED, COMPOSITION: 1000 ohms; ±10%; 1/4 watt
R33	RC1047114	RESISTOR, FIXED, COMPOSITION: 470 ohms; ±10%; 1/4 watt
R34		Same as R20
R35		Same as R30
R36		Same as R16
R37		Same as R32
R38		Not used
R39		Same as R20
R40		Same as R1
R41		Same as R16

PARTS LIST - RECEIVER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
R42		Same as R21
R43	RC1010414	RESISTOR, FIXED, COMPOSITION: 100,000 ohms; ±10%; 1/4 watt
R44	RC1082314	RESISTOR, FIXED, COMPOSITION: 82,000 ohms; ±10%; 1/4 watt
R45		Same as R30
R46		Same as R1
R47		Same as R16
R48		Same as R32
R49		Same as R16
R50		Same as R32
R51		Same as R6
R52		Same as R24
R53		Same as R20
R54		Same as R24
R55		Same as R20
R56		Same as R24
R57 and R58		Same as R20

PARTS LIST - RECEIVER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
R59	RC1082214	RESISTOR, FIXED, COMPOSITION: 8200 ohms; ±10%; 1/4 watt
R60		Same as R16
R61		Not used
R62		Same as R21
R63 and R64		Same as R32
R65		RESISTOR, VARIABLE, COMPOSITION: (VOL control) Listed for reference only (refer to Figure 4-1)
R66		Not used
R67		Same as R1
R68 and R69		Same as R14
R70		Same as R1
R71		Same as R16
R72		Same as R32
R73		Not used
R74		RESISTOR, VARIABLE, COMPOSITION: (SQL control) Listed for reference only (refer to Figure 4-1)

PARTS LIST - RECEIVER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
R75		Same as R11
R76		Same as R20
R77		Same as R11
R78		Same as R20
R79		Same as R14
R80		Same as R11
R81		Same as R21
R82		Same as R24
R83	RC1033314	RESISTOR, FIXED, COMPOSITION: 33,000 ohms; ±10%; 1/4 watt
R84	RC1022414	RESISTOR, FIXED, COMPOSITION: 220,000 ohms; ±10%; 1/4 watt
R85		Same as R33
R86	RC1050014	RESISTOR, FIXED, COMPOSTION: 50 ohms; ±10%; 1/4 watt
R87	RC1002012	RESISTOR, FIXED, COMPOSITION: 2 ohms; ±10%; 1/2 watt
R88	RC1022114	RESISTOR, FIXED, COMPOSITION: 220 ohms; ±10%; 1/4 watt
R89		Same as R3
R90		Same as R32

PARTS LIST - RECEIVER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
R91 and R92		Same as R13
R93		Same as R9
R94		Same as R1
T1	TI1241101	TRANSFORMER, AUDIO FREQUENCY: Audio input
T2	TO1350601	TRANSFORMER, AUDIO FREQUENCY: Audio output
Y1	SR-CRX-1L	CRYSTAL UNIT, QUARTZ: Receive; Listed for reference only, not factory supplied
Y2	XA1112155	CRYSTAL UNIT, QUARTZ: 12.155 MHz (2nd LO crystal)
Y3	FF1004505	CRYSTAL UNIT, CERAMIC: 455 kHz IF filter
Y4	FF1004504	CRYSTAL UNIT, CERAMIC: 455 kHz IF filter

PARTS LIST - TRANSMITTER (Figure 4-3)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C301	DF3616102	CAPACITOR, FIXED, MICA: 160 pf; ±10%

PARTS LIST - TRANSMITTER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C302	DF3610101	CAPACITOR, FIXED, MICA: 100 pf; ±10%
C303		Same as C302
C304	DD1550001	CAPACITOR, FIXED, CERAMIC: 50 pf; ±5%
C305		Same as C304
C306	DK1810301	CAPACITOR, FIXED, CERAMIC: 0.01 uf; +100%, -0
C307	DD1512101	CAPACITOR, FIXED, CERAMIC: 120 pf; ±5%
C308	DK1710201	CAPACITOR, FIXED, CERAMIC: 0.001 uf; ±20%
C309	DF3668003	CAPACITOR, FIXED, MICA: 68 pf; ±10%
C310		Same as C306
C311	DD1102001	CAPACITOR, FIXED, CERAMIC: 2 pf; ±0.5 pf
C312		Same as C309
C313	DD1614101	CAPACITOR, FIXED, CERAMIC: 140 pf; ±10%
C314		CAPACITOR, FIXED, MICA: Listed for reference only (refer to Table 4-1)

PARTS LIST - TRANSMITTER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C315		Same as C306
C316		Same as C311
C317		CAPACITOR, FIXED, MICA: Listed for reference only (refer to Table 4-1)
C318		Same as C304
C319	DF3639001	CAPACITOR, FIXED, MICA: 40 pf; ±10%
C320		Same as C308
C321	DD1205001	CAPACITOR, FIXED, CERAMIC: 5 pf; ±1 pf
C322		CAPACITOR, FIXED, MICA: Listed for reference only (refer to Table 4-1)
C323		CAPACITOR, FIXED, MICA: Listed for reference only (refer to Table 4-1)
C324 and C325		Not used
C326	DD1540001	CAPACITOR, FIXED, CERAMIC: 40 pf; ±5%
C327		Same as C304

PARTS LIST - TRANSMITTER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C328		CAPACITOR, FIXED, CERAMIC: Listed for reference only (refer to Table 4-1)
C329 thru C332		Same as C326
C333	CT1200001	CAPACITOR, VARIABLE: 0-20 pf
C334	DK1820301	CAPACITOR, FIXED, CERAMIC: 0.02 uf; +100%, -0
C335	DD1102001	CAPACITOR, FIXED, CERAMIC: 2 pf; ±1 pf
C336		Same as C306
C337	EA1060101	CAPACITOR, FIXED, ELECTROLYTIC: 10 uf; 10V DC
C338 thru C341		Same as C306
C342 and C343		Not used
C344		Same as C306
C345	DK1730202	CAPACITOR, FIXED, CERAMIC: 0.003 uf; ±20%

PARTS LIST - TRANSMITTER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C346	EA4750161	CAPACITOR, FIXED, ELECTROLYTIC: 5 uf; 16V DC
C347 and C348		Same as C345
C349	DF1733302	CAPACITOR, FIXED, FILM: 0.03 uf; ±20%
C350	EV4750161	CAPACITOR, FIXED, TANTALUM: 4.7 uf; 16V DC
C351	EV1060101	CAPACITOR, FIXED, TANTALUM: 10 uf; 6V DC
C352		Same as C349
C353 and C354		Same as C337
C355	DF3610002	CAPACITOR, FIXED, MICA: 10 pf; ±10%
C356 thru C359		Same as C337
C360	DF1710401	CAPACITOR, FIXED, FILM: 0.1 uf; ±20%
C361		Same as C345
C362		Same as C349

PARTS LIST - TRANSMITTER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C363	EW3340061	CAPACITOR, FIXED, TANTALUM: 0.33 uf; 6V DC
C364		Same as C345
C365		Same as C360
C366	DF1622301	CAPACITOR, FIXED, FILM: 0.022 uf; ±10%
C367		Same as C351
C368		Same as C350
C369		Same as C337
C370		Same as C306
C371	DK1647101	CAPACITOR, FIXED, CERAMIC: 470 pf; ±10%
C372		Same as C326
C373		CAPACITOR, FIXED, ELECTROLYTIC: Listed for reference only (refer to Figure 4-1)
C374		Same as C355
C375 thru C378		Not used
C379		Same as C306

PARTS LIST - TRANSMITTER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C380		CAPACITOR, FIXED, MICA: Listed for reference only (refer to Table 4-1)
C381		Same as C306
C382		Same as C371
C383 and C384		Same as C304
C385 thru C534		Not used
C535		Same as C319
C536		Same as C333
C537 thru C550		Not used
C551		Same as C346
C552	ED1050501	CAPACITOR, FIXED, ELECTROLYTIC: 1.0 uf; 5V DC
D31	HD3000309	SEMICONDUCTOR DEVICE, DIODE: Silicon zener
D32	HD1000101	SEMICONDUCTOR DEVICE, DIODE: Germanium

PARTS LIST - TRANSMITTER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
D33	HD2000206	SEMICONDUCTOR DEVICE, DIODE: Silicon
D34		Same as D33
K301	LY2012001	RELAY: DPDT; 12V DC coil
L301	LA7003003	INDUCTOR, RADIO FREQUENCY: Phase Modulator
L302	LW7008001	INDUCTOR, RADIO FREQUENCY: 1st Tripler output
L303		Same as L302
L304	LW7008002	INDUCTOR, RADIO FREQUENCY: 2nd Tripler output
L305		Same as L304
L306	LC1400001	INDUCTOR, RADIO FREQUENCY: Doubler output
L307		Same as L306
L308	LC1280001	INDUCTOR, RADIO FREQUENCY: Pre-driver output
L309		Same as L306
L310		Same as L308
L311	LC1381001	INDUCTOR, RADIO FREQUENCY: Power Amplifier input

PARTS LIST - TRANSMITTER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
L312 thru L317		Same as L306
L318	LF5008001	INDUCTOR, RADIO FREQUENCY: Directional coupler
L319		Same as L311
L320	LC2226001	INDUCTOR, AUDIO FREQUENCY: 22 mH
L321		Same as L320
Q31	HT800031A	SEMICONDUCTOR DEVICE, TRANSISTOR: NPN silicon
Q32 thru Q37		Same as Q31
Q38	HT3073010	SEMICONDUCTOR DEVICE, TRANSISTOR: NPN silicon
Q39	HT3070310	SEMICONDUCTOR DEVICE, TRANSISTOR: NPN silicon
Q40 thru Q44		Same as Q31
R301	RC1027314	RESISTOR, FIXED, COMPOSITION: 27,000 ohms; ±10%; 1/4 watt
R302	RC1039314	RESISTOR, FIXED, COMPOSITION: 39,000 ohms; ±10%; 1/4 watt

PARTS LIST - TRANSMITTER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
R303	RC1015214	RESISTOR, FIXED, COMPOSITION: 1500 ohms; ±10%; 1/4 watt
R304	RC1047214	RESISTOR, FIXED, COMPOSITION: 4700 ohms; ±10%; 1/4 watt
R305	RC1022314	RESISTOR, FIXED, COMPOSITION: 22,000 ohms; ±10%; 1/4 watt
R306	RC1022214	RESISTOR, FIXED, COMPOSITION: 2200 ohms; ±10%; 1/4 watt
R307		Same as R304
R308		Same as R305
R309	RC1022114	RESISTOR, FIXED, COMPOSITION: 220 ohms; ±10%; 1/4 watt
R310	RC1010114	RESISTOR, FIXED, COMPOSITION: 100 ohms; ±10%; 1/4 watt
R311	RC1056314	RESISTOR, FIXED, COMPOSITION: 56,000 ohms; ±10%; 1/4 watt
R312		Same as R309
R313		Same as R310
R314		Same as R311
R315		Same as R309
R316		Same as R301
R317		Not used

PARTS LIST - TRANSMITTER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
R318	RC1050014	RESISTOR, FIXED, COMPOSITION: 50 ohms; ±10%; 1/4 watt
R319 thru R321		Not used
R322		Same as R309
R323		Same as R310
R324	RC1033014	RESISTOR, FIXED, COMPOSITION: 33 ohms; ±10%; 1/4 watt
R325	RC1039114	RESISTOR, FIXED, COMPOSITION: 390 ohms; ±10%; 1/4 watt
R326		Not used
R327		Same as R304
R328		Same as R324
R329	RC1082214	RESISTOR, FIXED, COMPOSITION: 8200 ohms; ±10%; 1/4 watt
R330		Same as R302
R331		Not used
R332		Same as R303
R333		Not used
R334	RC1068214	RESISTOR, FIXED, COMPOSITION: 6800 ohms; ±10%; 1/4 watt

PARTS LIST - TRANSMITTER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
R335	RC1010314	RESISTOR, FIXED, COMPOSITION: 10,000 ohms; ±10%; 1/4 watt
R336		Same as R303
R337 and R338		Same as R306
R339		Same as R325
R340		Same as R335
R341	RC1033314	RESISTOR, FIXED, COMPOSITION: 33,000 ohms; ±10%; 1/4 watt
R342	RC1047114	RESISTOR, FIXED, COMPOSITION: 470 ohms; ±10%; 1/4 watt
R343	RC1027214	RESISTOR, FIXED, COMPOSITION: 2700 ohms; ±10%; 1/4 watt
R344		Same as R343
R345		Same as R311
R346		Same as R343
R347		Same as R342
R348		Same as R329
R349	RC1015314	RESISTOR, FIXED, COMPOSITION: 15,000 ohms; ±10%; 1/4 watt
R350	RC1010214	RESISTOR, FIXED, COMPOSITION: 1000 ohms; ±10%; 1/4 watt

PARTS LIST - TRANSMITTER (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
R351	RA0202001	RESISTOR, VARIABLE, COMPOSITION: 2000 ohms
R352	RC1082114	RESISTOR, FIXED, COMPOSITION: 820 ohms; ±10%; 1/4 watt
R353 thru R359		Not used
R360		Same as R352
R361 thru R550		Not used
R551		Same as R335
Y301	SR-CTX-1L	CRYSTAL UNIT, QUARTZ: Transmit; Listed for reference only, not factory supplied

PARTS LIST - TONE CODED SQUELCH (Figure 4-4)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C1	EM1040251	CAPACITOR, FIXED, ELECTROLYTIC: 0.1 uf; 25V DC
C2		Same as C1
C3	DK1820301	CAPACITOR, FIXED, CERAMIC: 0.02 uf; +100%, -0

PARTS LIST - TONE CODED SQUELCH (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C4		Same as C1
C5	DK1730202	CAPACITOR, FIXED, CERAMIC: 0.003 uf; ±20%
C6	EM1050101	CAPACITOR, FIXED, ELECTROLYTIC: 1.0 uf; 10V DC
C7	EA4750161	CAPACITOR, FIXED, ELECTROLYTIC: 4.7 uf; 16V DC
C8 and C9		Same as C5
C10	EE3360161	CAPACITOR, FIXED, ELECTROLYTIC: 33 uf; 16V DC
C11		Same as C10
C12		Same as C5
C13 and C14		Same as C10
C15		Same as C1
C16		Same as C7
C17		Not used
C18 and C19		Same as C7

PARTS LIST - TONE CODED SQUELCH (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C20		Same as C10
C21		Same as C5
C22		Same as C7
D1	HD2000206	SEMICONDUCTOR DEVICE, DIODE: Silicon
D2 thru D8		Same as D1
D9	HD3000109	SEMICONDUCTOR DEVICE, DIODE: Silicon zener
D10		Same as D9
D11	HD1000101	SEMICONDUCTOR DEVICE, DIODE: Germanium
D12		Same as D1
L1	LC2708002	INDUCTOR, AUDIO FREQUENCY:
Q1	HT800011H	SEMICONDUCTOR DEVICE, TRANSISTOR: NPN silicon
Q2		Same as Q1
Q3	HT400331A	SEMICONDUCTOR DEVICE, TRANSISTOR: NPN silicon
Q4	HT600011E	SEMICONDUCTOR DEVICE, TRANSISTOR: PNP silicon

PARTS LIST - TONE CODED SQUELCH (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
Q5 and Q6		Same as Q1
Q7		Not used
Q8		Same as Q4
R1	RC1082214	RESISTOR, FIXED, COMPOSITION: 8200 ohms; ±10%; 1/4 watt
R2	RC1022314	RESISTOR, FIXED, COMPOSITION: 22,000 ohms; ±10%; 1/4 watt
R3	RC1033314	RESISTOR, FIXED, COMPOSITION: 33,000 ohms; ±10%; 1/4 watt
R4		Same as R3
R5	RC1033214	RESISTOR, FIXED, COMPOSITION: 3300 ohms; ±10%; 1/4 watt
R6	RC1010314	RESISTOR, FIXED, COMPOSITION: 10,000 ohms; ±10%; 1/4 watt
R7		Same as R5
R8	RC10---14	RESISTOR, FIXED, COMPOSITION: Selected value; nominally 2200 to 2700 ohms; ±10%; 1/4 watt
R9	RC1047314	RESISTOR, FIXED, COMPOSITION: 47,000 ohms; ±10%; 1/4 watt
R10	RC1010214	RESISTOR, FIXED, COMPOSITION: 1000 ohms; ±10%; 1/4 watt

PARTS LIST - TONE CODED SQUELCH (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
R11	RC1047214	RESISTOR, FIXED, COMPOSITION: 4700 ohms; ±10%; 1/4 watt
R12	RC1033114	RESISTOR, FIXED, COMPOSITION: 330 ohms; ±10%; 1/4 watt
R13	RC1015214	RESISTOR, FIXED, COMPOSITION: 1500 ohms; ±10%; 1/4 watt
R14	RA0202001	RESISTOR, VARIABLE, COMPOSITION: 2000 ohms
R15		Same as R11
R16	RC1010414	RESISTOR, FIXED, COMPOSITION: 100,000 ohms; ±10%; 1/4 watt
R17		Same as R6
R18		Not used
R19	RC10---14	RESISTOR, FIXED, COMPOSITION: Selected value; nominally 15,000 to 27,000 ohms; ±10%; 1/4 watt
R20		Not used
R21		Same as R6
R22		Same as R13
R23		Not used
R24		Same as R10

PARTS LIST - TONE CODED SQUELCH (Cont)

REF DESIG	SCC PART NUMBER	DESCRIPTION
R25	RC1056214	RESISTOR, FIXED, COMPOSITION: 5600 ohms; ±10%; 1/4 watt
R26	RC1015314	RESISTOR, FIXED, COMPOSITION: 15,000 ohms; ±10%; 1/4 watt
R27	RC10---14	RESISTOR, FIXED, COMPOSITION: Selected value; nominally 2200 to 5600 ohms; ±10%; 1/4 watt
R28		Same as R10
R29		Same as R11
R30	RC10---14	RESISTOR, FIXED, COMPOSITION: Selected value; nominally 1500 ohms; ±10%; 1/4 watt
Z1	SR-CRT1L	REED, RESONANT: Listed for reference only; supplied to customers frequency

TABLE 4-1. FREQUENCY VS. CAPACITANCE

FREQUENCY RANGE - 144.00 TO 150.80 MHz		
REF DESIG	SCC PART NUMBER	DESCRIPTION
C11	DD1210001	CAPACITOR, FIXED, CERAMIC: 10 pf; ±1%
C18	DD1620001	CAPACITOR, FIXED, CERAMIC: 20 pf; ±10%
C52	DF3668001	CAPACITOR, FIXED, MICA: 68 pf; ±10%
C113	DD1207001	CAPACITOR, FIXED, CERAMIC: 7 pf; ±10%
C114	DD1103001	CAPACITOR, FIXED, CERAMIC: 3 pf; ±10%
C115 and C116		Same as C114
C117		Same as C18
C118	DD1101001	CAPACITOR, FIXED, CERAMIC: 1 pf; ±10%
C119	DD1102001	CAPACITOR, FIXED, CERAMIC: 2 pf; ±10%
C314	DF3656001	CAPACITOR, FIXED, MICA: 56 pf; ±10%
C317		Same as C314
C322	DF3620001	CAPACITOR, FIXED, MICA: 20 pf; ±10%

TABLE 4-1. FREQUENCY VS. CAPACITANCE (Cont)

FREQUENCY RANGE - 144.00 TO 150.80 MHz (Cont)		
REF DESIG	SCC PART NUMBER	DESCRIPTION
C323	DF3651001	CAPACITOR, FIXED, MICA: 51 pf; ±10%
C328	DD1550001	CAPACITOR, FIXED, CERAMIC: 50 pf; ±10%
C380	DF3610002	CAPACITOR, FIXED, MICA: 10 pf; ±10%
FREQUENCY RANGE - 150.80 TO 156.25 MHz		
REF DESIG	SCC PART NUMBER	DESCRIPTION
C11	DD1210001	CAPACITOR, FIXED, CERAMIC: 10 pf; ±1%
C18	DD1615001	CAPACITOR, FIXED, CERAMIC: 15 pf; ±10%
C52	DF3668001	CAPACITOR, FIXED, MICA: 68 pf; ±10%
C113	DD1205001	CAPACITOR, FIXED, CERAMIC: 5 pf; ±10%
C114	DD1103001	CAPACITOR, FIXED, CERAMIC: 3 pf; ±10%
C115 and C116		Same as C114

TABLE 4-1. FREQUENCY VS. CAPACITANCE (Cont)

FREQUENCY RANGE - 150.80 TO 156.25 MHz (Cont)		
REF DESIG	SCC PART NUMBER	DESCRIPTION
C117		Same as C11
C118	DD1101001	CAPACITOR, FIXED, CERAMIC: 1 pf; ±10%
C119	DD1102001	CAPACITOR, FIXED, CERAMIC: 2 pf; ±10%
C314	DF3651001	CAPACITOR, FIXED, MICA: 51 pf; ±10%
C317		Same as C314
C322	DF3610002	CAPACITOR, FIXED, MICA: 10 pf; ±10%
C323		Same as C314
C328	DD1550001	CAPACITOR, FIXED, CERAMIC: 50 pf; ±10%
C380		Not used
FREQUENCY RANGE - 156.25 TO 162.00 MHz		
REF DESIG	SCC PART NUMBER	DESCRIPTION
C11	DD1207001	CAPACITOR, FIXED, CERAMIC: 7 pf; ±1%
C18	DD1615001	CAPACITOR, FIXED, CERAMIC: 15 pf; ±10%

TABLE 4-1. FREQUENCY VS. CAPACITANCE (Cont)

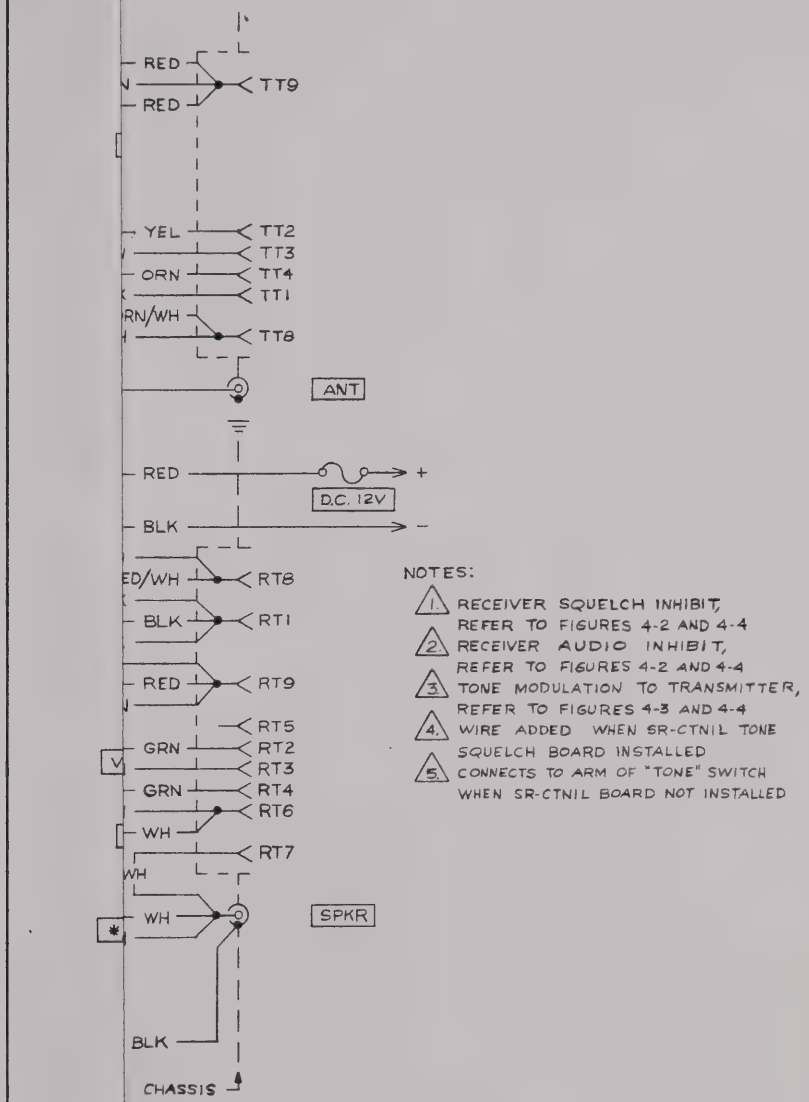
FREQUENCY RANGE - 156.25 TO 162.00 (Cont)		
REF DESIG	SCC PART NUMBER	DESCRIPTION
C52	DF3640001	CAPACITOR, FIXED, MICA: 40 pf; ±10%
C113	DD1205001	CAPACITOR, FIXED, CERAMIC: 5 pf; ±10%
C114	DD1101001	CAPACITOR, FIXED, CERAMIC: 1 pf; ±10%
C115 and C116		Same as C114
C117	DD1210001	CAPACITOR, FIXED, CERAMIC: 10 pf; ±10%
C118		Not used
C119	DD1102001	CAPACITOR, FIXED, CERAMIC: 2 pf; ±10%
C314	DD3651001	CAPACITOR, FIXED, MICA: 51 pf; ±10%
C317		Same as C314
C322	DF3610002	CAPACITOR, FIXED, MICA: 10 pf; ±10%
C323	DF3639001	CAPACITOR, FIXED, MICA: 39 pf; ±10%
C328	DD1550001	CAPACITOR, FIXED, CERAMIC: 50 pf; ±10%

TABLE 4-1. FREQUENCY VS. CAPACITANCE (Cont)

FREQUENCY RANGE - 156.25 TO 162.00 MHz (Cont)		
REF DESIG	SCC PART NUMBER	DESCRIPTION
C380		Not used
FREQUENCY RANGE - 162.00 TO 174.00 MHz		
REF DESIG	SCC PART NUMBER	DESCRIPTION
C11	DD1205001	CAPACITOR, FIXED, CERAMIC: 5 pf; ±1%
C18	DD1207001	CAPACITOR, FIXED, CERAMIC: 7 pf; ±1%
C52	DF3640001	CAPACITOR, FIXED, MICA: 40 pf; ±10%
C113	DD1102001	CAPACITOR, FIXED, CERAMIC: 2 pf; ±10%
C114 thru C119		Not used
C314	DF3651001	CAPACITOR, FIXED, MICA: 51 pf; ±10%
C317	DF3639001	CAPACITOR, FIXED, MICA: 39 pf; ±10%
C322	DF3610002	CAPACITOR, FIXED, MICA: 10 pf; ±10%
C323		Same as C317

TABLE 4-1. FREQUENCY VS. CAPACITANCE (Cont)

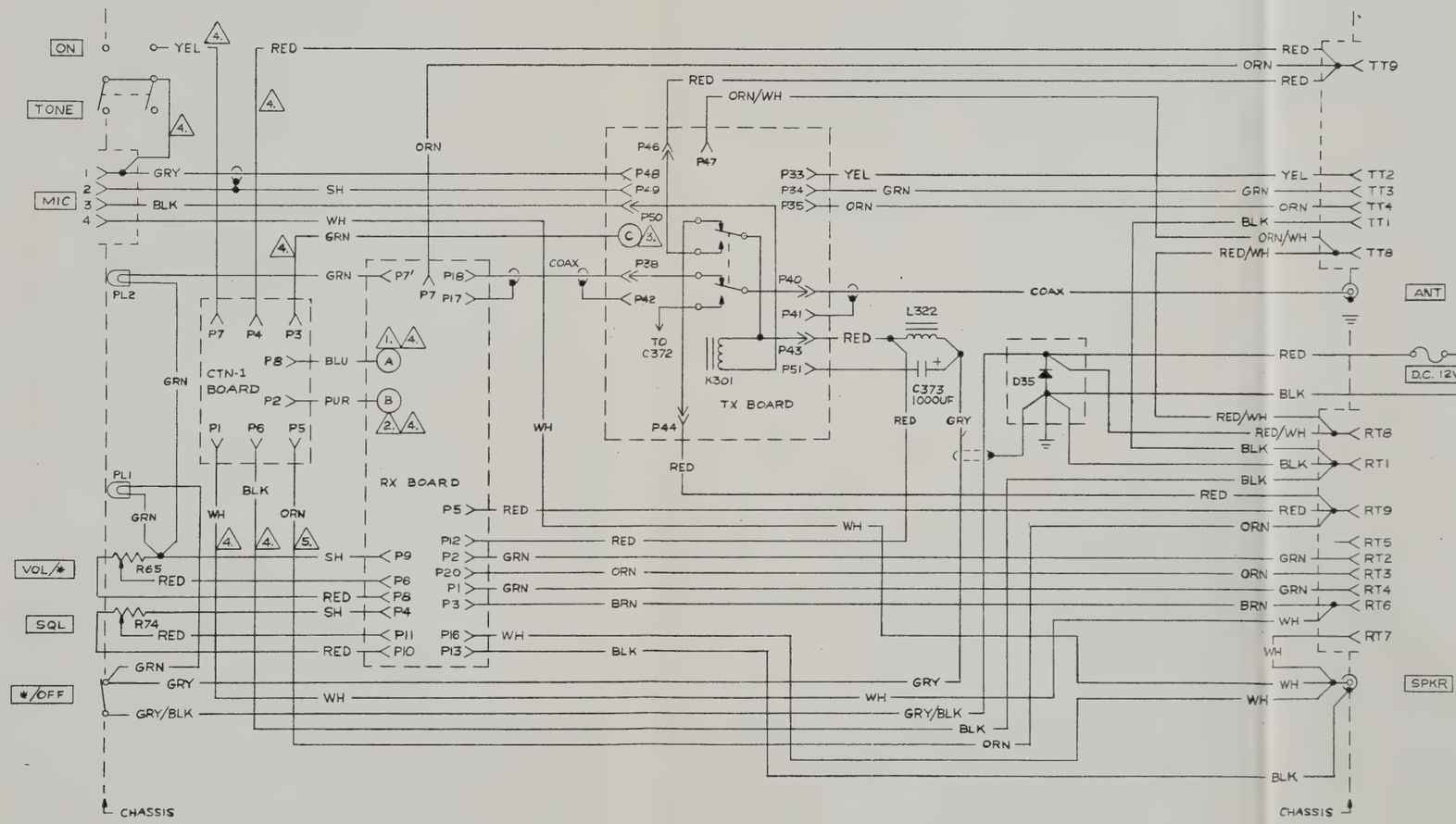
FREQUENCY RANGE - 162.00 TO 174.00 MHz (Cont)		
REF DESIG	SCC PART NUMBER	DESCRIPTION
C328	DD1540001	CAPACITOR, FIXED, CERAMIC: 40 pf; ±10%
C380		Not used



NOTES:

1. RECEIVER SQUELCH INHIBIT, REFER TO FIGURES 4-2 AND 4-4
2. RECEIVER AUDIO INHIBIT, REFER TO FIGURES 4-2 AND 4-4
3. TONE MODULATION TO TRANSMITTER, REFER TO FIGURES 4-3 AND 4-4
4. WIRE ADDED WHEN SR-CTNIL TONE SQUELCH BOARD INSTALLED
5. CONNECTS TO ARM OF "TONE" SWITCH WHEN SR-CTNIL BOARD NOT INSTALLED

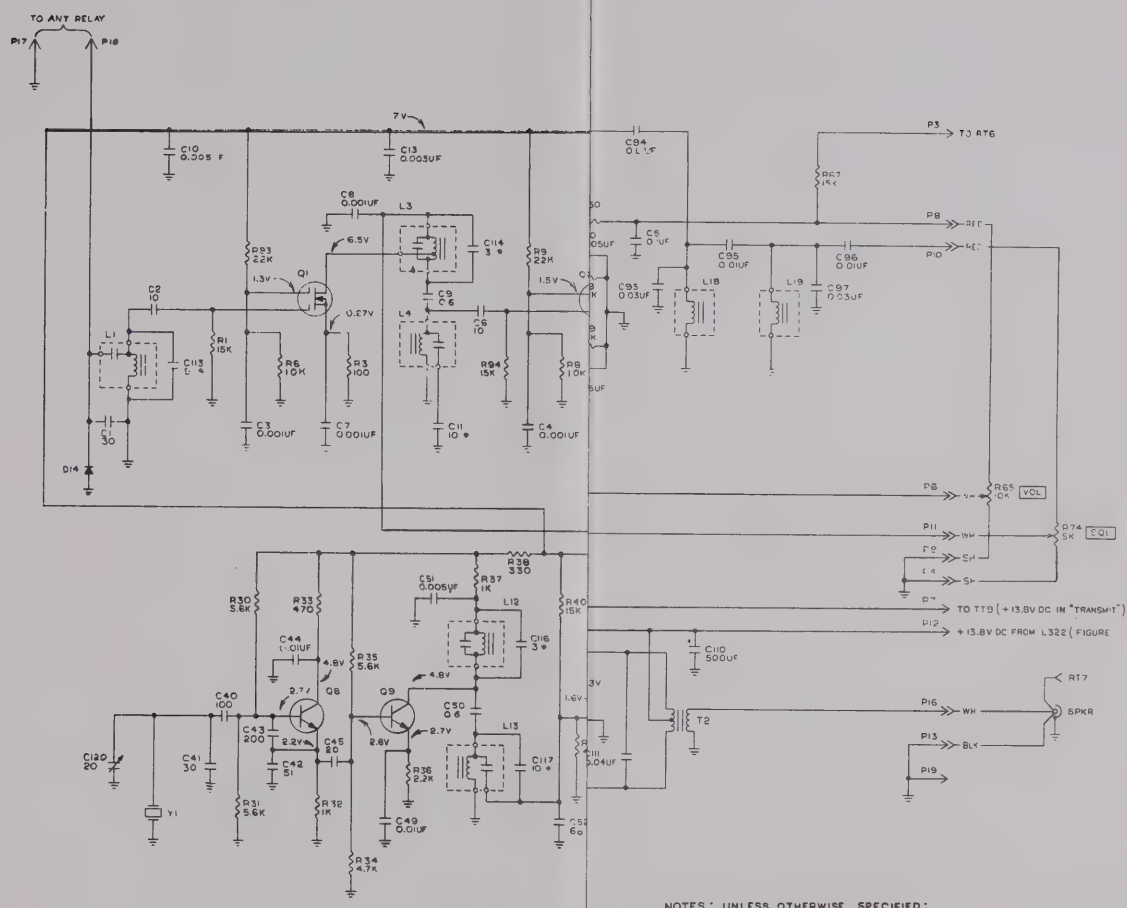
CHASSIS INTERWIRING DIAGRAM - SR-C803L RADIOTELEPHONE



NOTES:

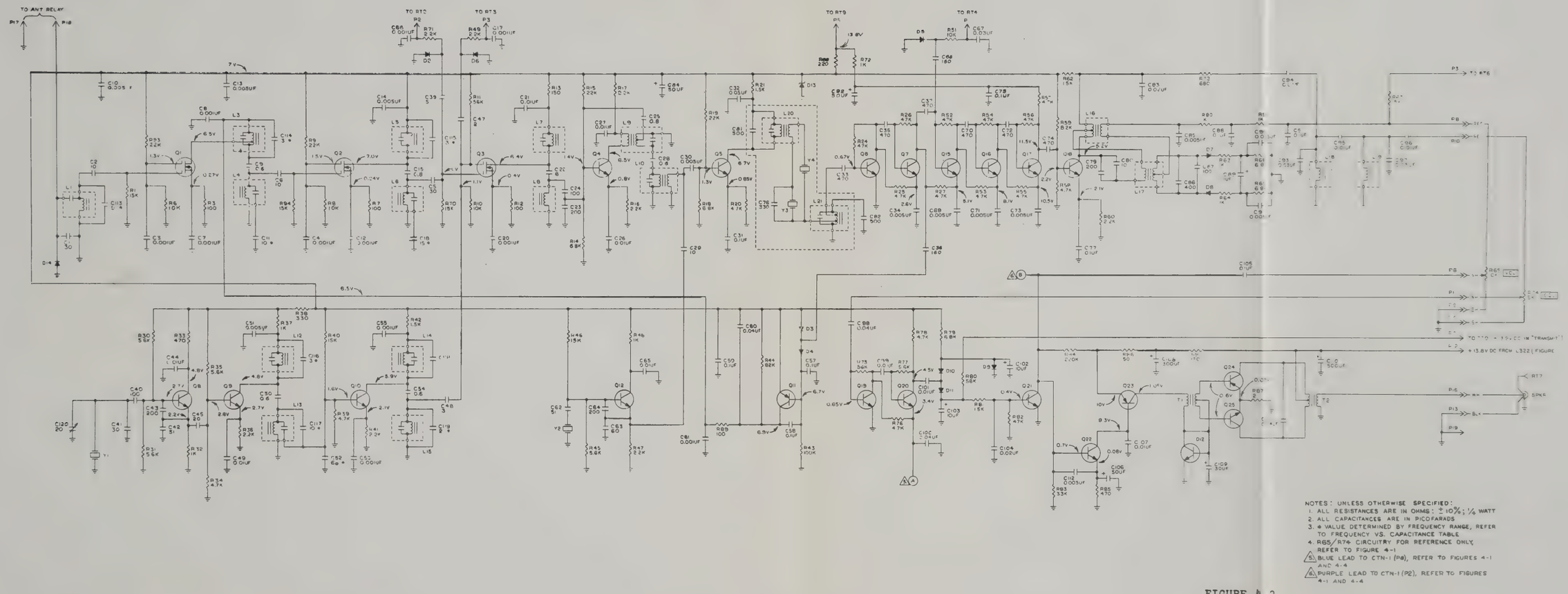
1. RECEIVER SQUELCH INHIBIT, REFER TO FIGURES 4-2 AND 4-4
2. RECEIVER AUDIO INHIBIT, REFER TO FIGURES 4-2 AND 4-4
3. TONE MODULATION TO TRANSMITTER, REFER TO FIGURES 4-3 AND 4-4
4. WIRE ADDED WHEN SR-CTNIL TONE SQUELCH BOARD INSTALLED
5. CONNECTS TO ARM OF "TONE" SWITCH WHEN SR-CTNIL BOARD NOT INSTALLED

FIGURE 4-1. CHASSIS INTERWIRING DIAGRAM - MODEL SR-C803L RADIOTELEPHONE



NOTES: UNLESS OTHERWISE SPECIFIED:
1. ALL RESISTANCES ARE IN OHMS: ±10%; ¼ WATT
2. ALL CAPACITANCES ARE IN PICOFARADS
3. * VALUE DETERMINED BY FREQUENCY RANGE, REFER TO FREQUENCY VS. CAPACITANCE TABLE
4. R65/R74 CIRCUITRY FOR REFERENCE ONLY, REFER TO FIGURE 4-1
5. BLUE LEAD TO CTN-1 (P8), REFER TO FIGURES 4-1 AND 4-4
6. PURPLE LEAD TO CTN-1 (P2), REFER TO FIGURES 4-1 AND 4-4

ATIC DIAGRAM - MODEL SR-C803L
ER (SHEET 1 OF 2)



NOTES: UNLESS OTHERWISE SPECIFIED:
1. ALL RESISTANCES ARE IN OHMS; ±10%; ¼ WATT
2. ALL CAPACITANCES ARE IN PICOFARADS
3. ◆ VALUE DETERMINED BY FREQUENCY RANGE, REFER TO FREQUENCY VS. CAPACITANCE TABLE
4. R65/R74 CIRCUITRY FOR REFERENCE ONLY, REFER TO FIGURE 4-1
5. BLUE LEAD TO CTN-1 (P8), REFER TO FIGURES 4-1 AND 4-4
6. PURPLE LEAD TO CTN-1 (P2), REFER TO FIGURES 4-1 AND 4-4

FIGURE 4-2.

SCHEMATIC DIAGRAM - MODEL SR-C803L
RECEIVER (SHEET 1 OF 2)

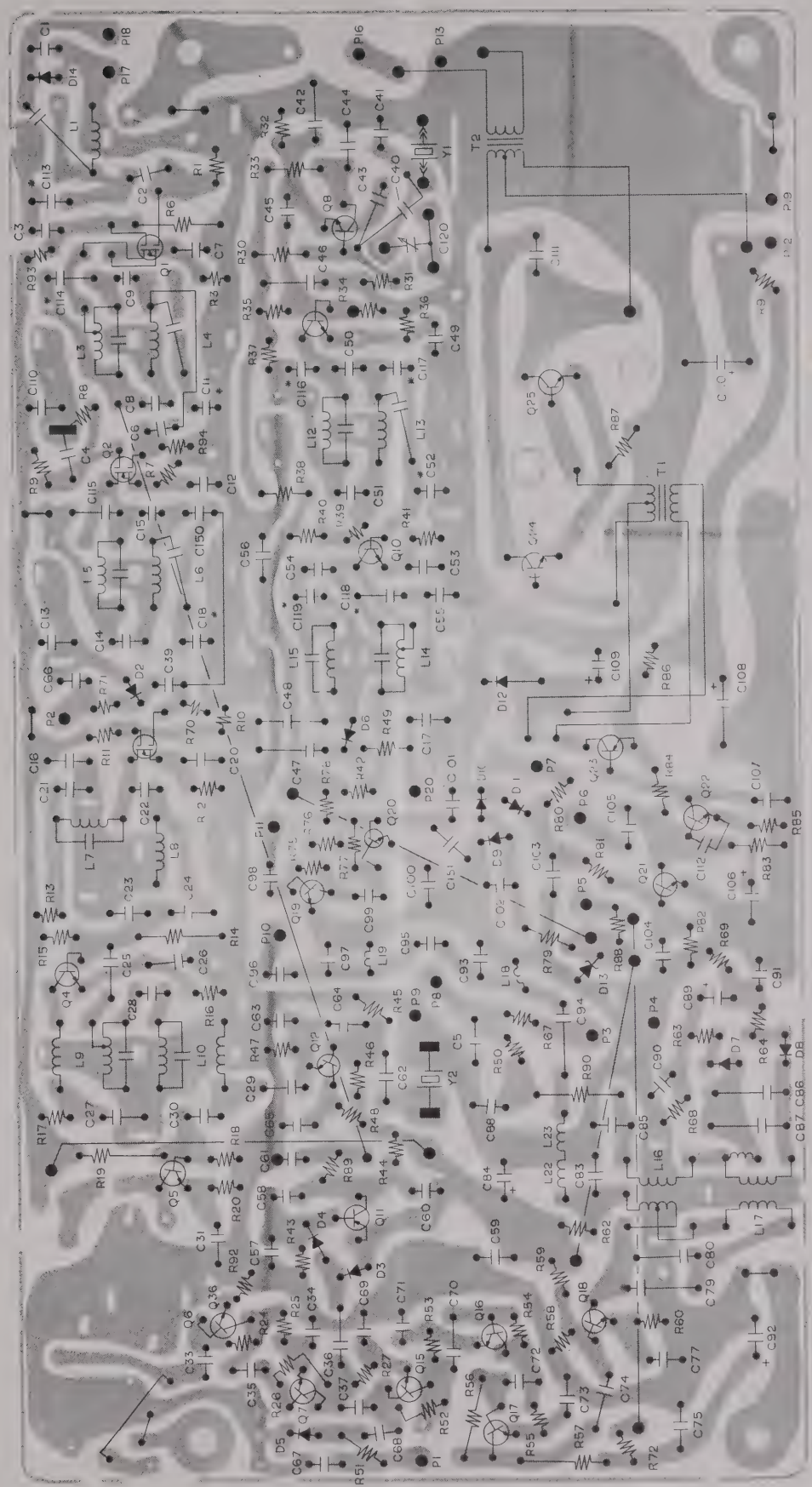
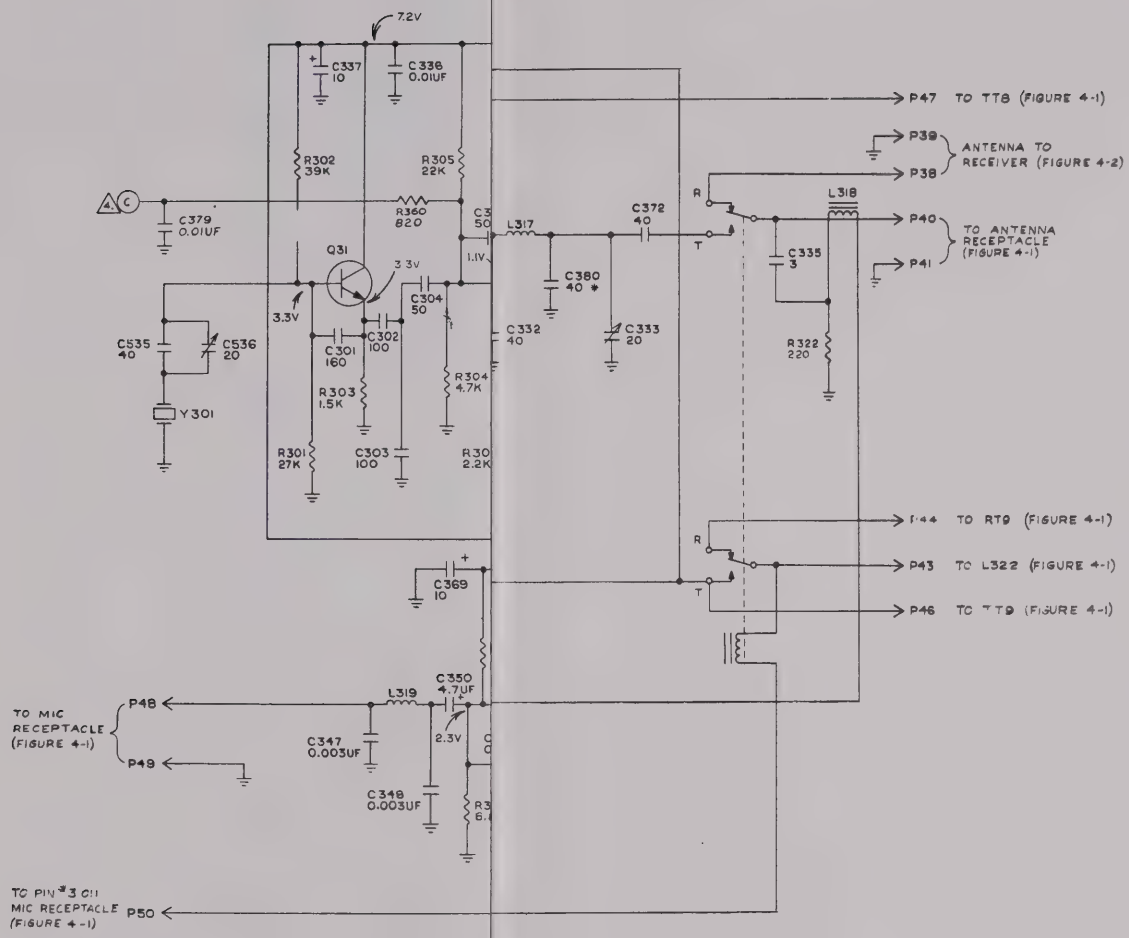
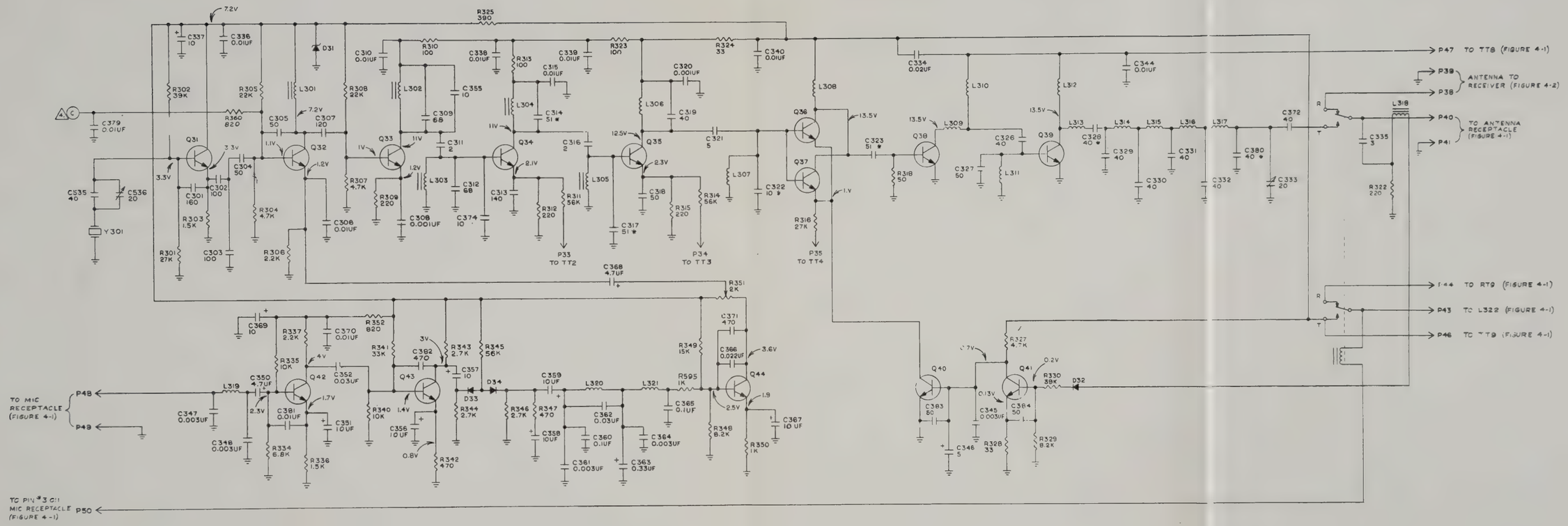


FIGURE 4-2. SCHEMATIC DIAGRAM - MODEL SR-C803L
RECEIVER (SHEET 2 OF 2)



CHEMATIC DIAGRAM - MODEL SR-C803L
NSMITTER (SHEET 1 OF 2)



NOTES: UNLESS OTHERWISE SPECIFIED:
1. ALL RESISTANCES ARE IN OHMS; ± 10%; ¼ WATT
2. ALL CAPACITANCES ARE IN PICOFARADS
3. * VALUE DETERMINED BY FREQUENCY RANGE, REFER TO FREQUENCY VS. CAPACITANCE TABLE
4. GREEN LEAD TO CTN-1 (P3), REFER TO FIGURES 4-1 AND 4-4

FIGURE 4-3. SCHEMATIC DIAGRAM - MODEL SR-C803L TRANSMITTER (SHEET 1 OF 2)

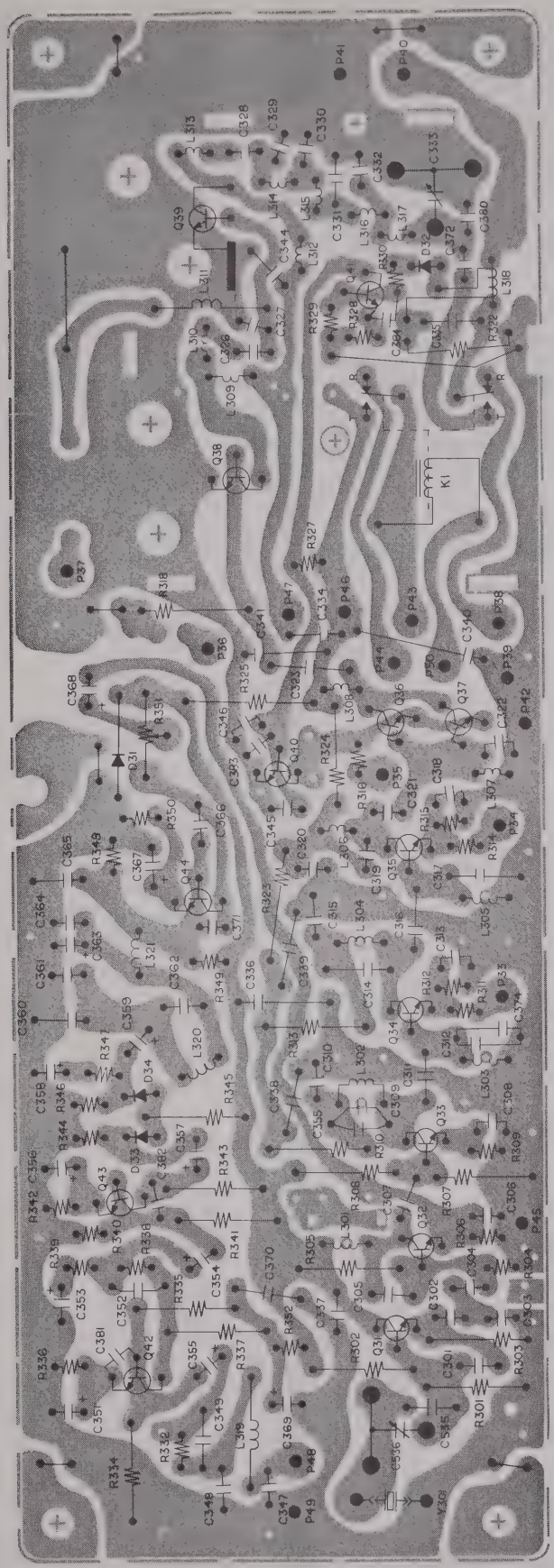
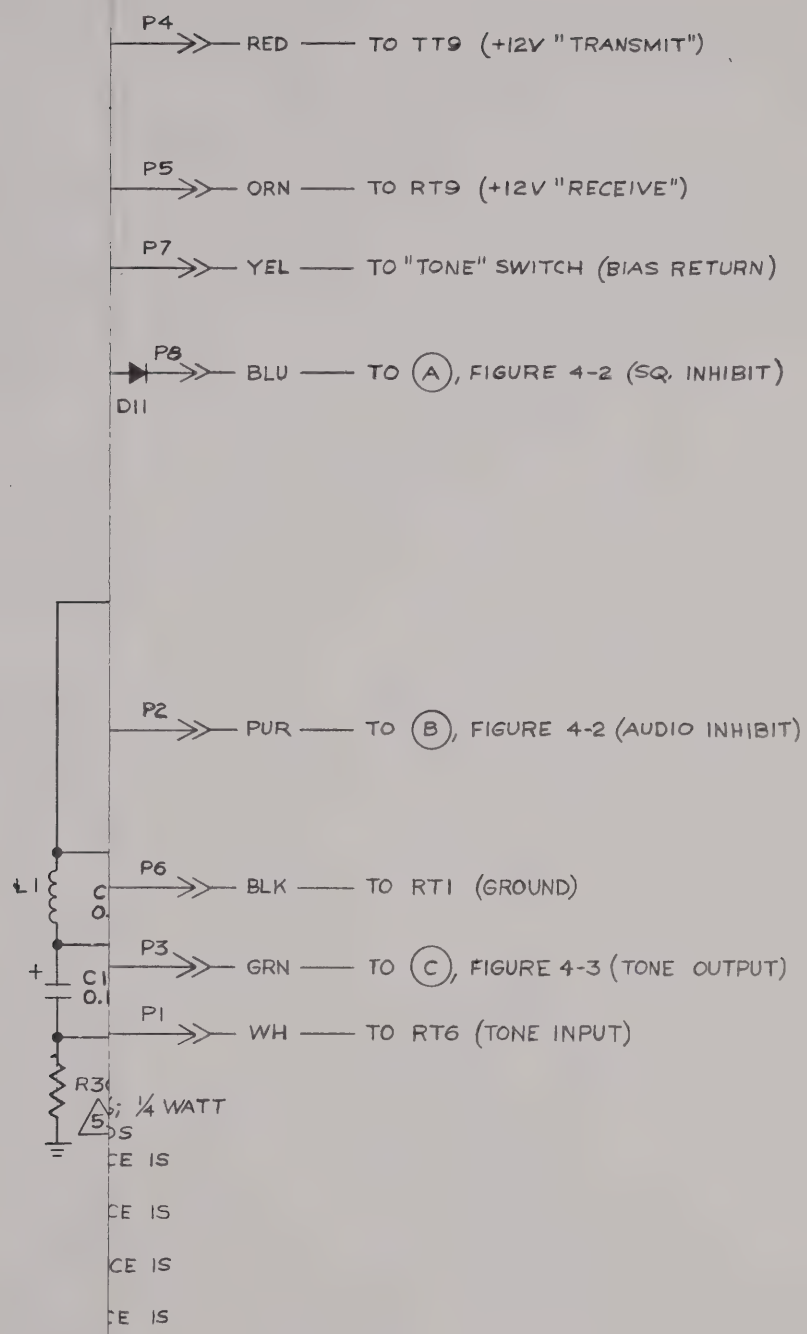
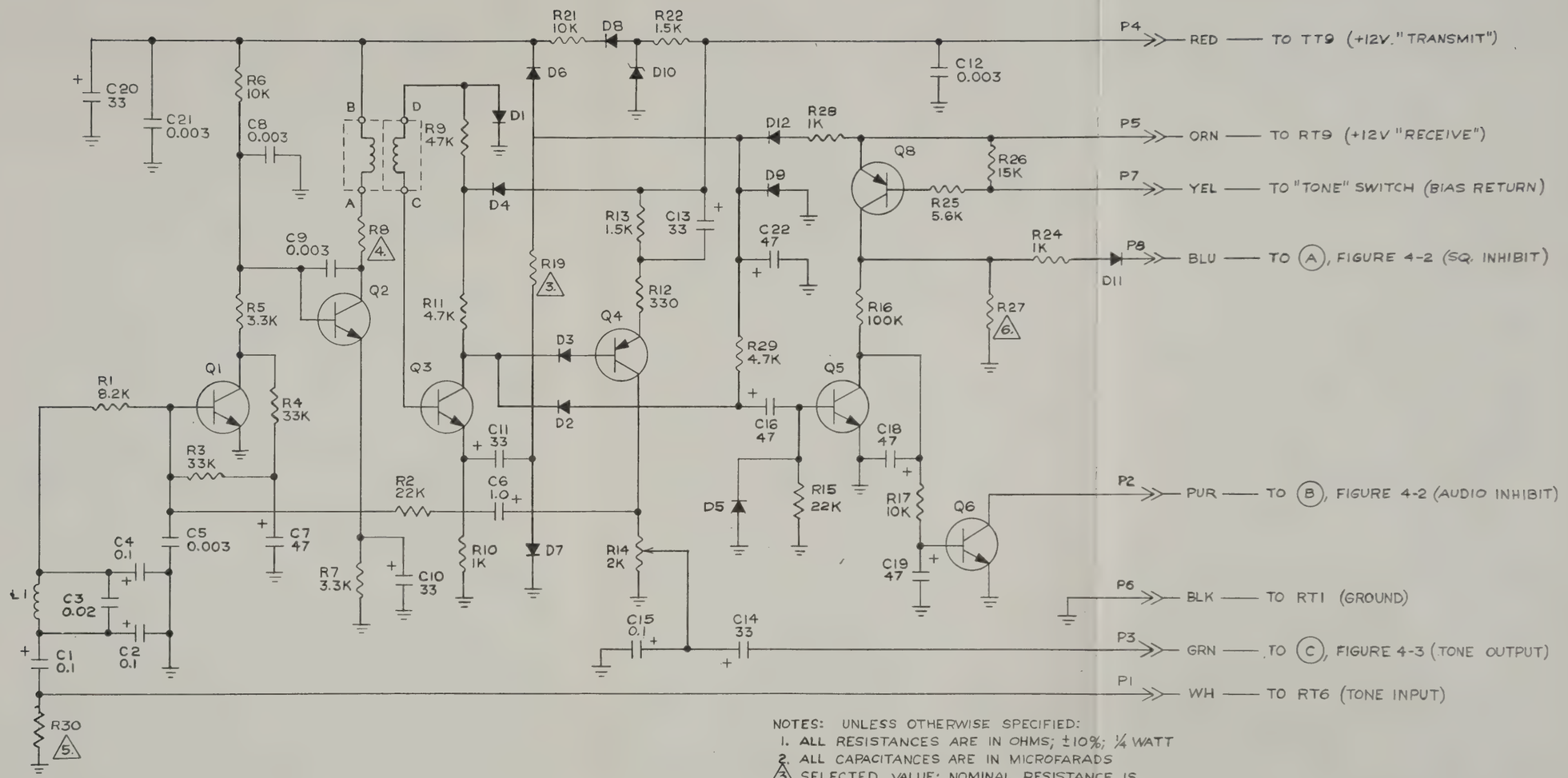


FIGURE 4-3. SCHEMATIC DIAGRAM - MODEL SR-C803L
TRANSMITTER (SHEET 2 OF 2)



SCHEMATIC DIAGRAM - MODEL SR-CTN1L
TONE CODED SQUELCH



NOTES: UNLESS OTHERWISE SPECIFIED:
1. ALL RESISTANCES ARE IN OHMS; ±10%; ¼ WATT
2. ALL CAPACITANCES ARE IN MICROFARADS
3. SELECTED VALUE; NOMINAL RESISTANCE IS 15K TO 27K OHMS
4. SELECTED VALUE; NOMINAL RESISTANCE IS 2.2K TO 2.7K OHMS
5. SELECTED VALUE; NOMINAL RESISTANCE IS 1.5K OHMS
6. SELECTED VALUE; NOMINAL RESISTANCE IS 2.2K TO 5.6K OHMS

FIGURE 4-4. SCHEMATIC DIAGRAM - MODEL SR-CTN1L TONE CODED SQUELCH

MECHANICAL PARTS LIST

FIG & INDEX	SCC PART NUMBER	DESCRIPTION	QTY
5-1-	SR-C803L	VHF/FM BUSINESS/INDUSTRIAL RADIOTELEPHONE	REF
1	198816001	. BRACKET, UNIVERSAL MOUNTING (ATTACHING PARTS)	1
2	198816050	. BOLT, HEXAGONAL	4
3	54020501E	. WASHER, FLAT	4
		- - * - -	
4	198806401	. CASE, RADIOTELEPHONE (ATTACHING PARTS)	1
5	51100308L	. SCREW, MACHINE: Philips head	3
6	198827706	. WASHER: Rubber	3
7	51400310Y	. SCREW, SHEET METAL: Philips head	6
		- - * - -	
	No Number	. RADIOTELEPHONE ASSY	1
8	198815401	. . KNOB, FLUTED	2
	No Number	. . PANEL ASSY, FRONT	1
9	198827711	. . . GASKET	1
10	198805101	. . . GUIDE, CHASSIS: Nylon	3
11	198840101	. . . FRAME, FRONT PANEL (ATTACHING PARTS)	1
12	51340308Y	. . . SCREW, MACHINE: Flat head	4
13	198805101	. . . GUIDE, CHASSIS: Nylon	2
		- - * - -	
14	198827710	. . . GASKET, PANEL SHAFT	2
15	YJ9000002	. . . RECEPTACLE, MICROPHONE: 4-pin (ATTACHING PARTS)	1
16	No Number	. . . NUT, HEXAGONAL: Part of Item #15	1
17	198827705	. . . GASKET	1
		- - * - -	
18	198827001	. . . LENS: Transmit indicator	1
19	199706301	. . . ESCUTCHEON	1
20	198806301	. . . PANEL, FRONT (ATTACHING PARTS)	1
21	51020305E	. . . SCREW, MACHINE: Philips head	5

MECHANICAL PARTS LIST (Cont)

FIG & INDEX	SCC PART NUMBER	DESCRIPTION	QTY
5-1-22	54020301E	. . . WASHER, FLAT	5
		- - * - -	
*23	YD3518001	. . PRINTED WIRING BOARD ASSY: Tone squelch	1
		(ATTACHING PARTS)	
24	51020305E	. . SCREW, MACHINE: Philips head	2
*25	51400310Y	. . SCREW, SHEET METAL: Philips head	1
		- - * - -	
	No Number	. . CHASSIS ASSY, FRONT	1
		(ATTACHING PARTS)	
26	51340308Y	. . SCREW, MACHINE: Flat head	4
27	198800502	. . NUT, BRACKET	4
		- - * - -	
28	198810102	. . . STANDOFF, THREADED	2
29	SC0202006	. . . SWITCH, TOGGLE: TONE ON	1
		(ATTACHING PARTS)	
30	No Number	. . . BOOT: Part of Item #29	1
31	No Number	. . . NUT, HEXAGONAL: Part of Item #29	2
32	No Number	. . . WASHER, LOCK: Part of Item #29	1
33	No Number	. . . WASHER, KEYED: Part of Item #29	1
		- - * - -	
34	YJ0200022	. . . RECEPTACLE, INDICATOR	2
		(ATTACHING PARTS)	
35	51400310Y	. . . SCREW, SHEET METAL: Philips head	2
36	198800502	. . . NUT, BRACKET	2
		- - * - -	
37	RK1103008	. . . RESISTOR, VARIABLE, COMPOSITION: With switch; R65	1
		(ATTACHING PARTS)	
38	No Number	. . . NUT, HEXAGONAL: Part of Item #37	1
39	198827708	. . . GASKET, SHAFT	1
		- - * - -	

MECHANICAL PARTS LIST (Cont)

FIG & INDEX	SCC PART NUMBER	DESCRIPTION	QTY
5-1-40	RK0502003	. . . RESISTOR, VARIABLE, COMPOSITION: R74	1
		(ATTACHING PARTS)	
41	No Number	. . . NUT, HEXAGONAL: Part of Item #40	1
42	198827708	. . . GASKET, SHAFT	1
		- - * - -	
43	198810502	. . . CHASSIS, FRONT PLATE	1
44	YD1988001	. . PRINTED WIRING BOARD ASSY: Receiver	1
		(ATTACHING PARTS)	
45	51400310Y	. . SCREW, SHEET METAL: Philips head	4
46	54050300R	. . WASHER, LOCK	4
		- - * - -	
47	YD1988002	. . PRINTED WIRING BOARD ASSY: Transmitter	1
		(ATTACHING PARTS)	
48	51400310Y	. . SCREW, SHEET METAL: Philips head	5
49	54050300R	. . WASHER, LOCK	5
		- - * - -	
50	YP0500004	. . CONNECTOR, TEST: 9-pin	2
51	198811804	. . PAD: Neoprene	2
52	YJ1000013	. . RECEPTACLE, COAXIAL: Antenna	1
		(ATTACHING PARTS)	
53	198827713	. . GASKET	1
54	51020305E	. . SCREW, MACHINE: Philips head	2
55	G2031650W	. . LUG, TERMINAL	1
56	53110303E	. . NUT, HEXAGONAL	2
		- - * - -	
57	HD2000110	. . SEMICONDUCTOR DEVICE, DIODE: D35	1
58	LC2106001	. . INDUCTOR, POWER: L322	1
		(ATTACHING PARTS)	
59	51020305E	. . SCREW, MACHINE: Philips head	2
60	53110303E	. . NUT, HEXAGONAL	2
		- - * - -	

MECHANICAL PARTS LIST (Cont)

FIG & INDEX	SCC PART NUMBER	DESCRIPTION	QTY
5-1-61	EA1080161	. . CAPACITOR, FIXED, ELECTROLYTIC: C373	1
		(ATTACHING PARTS)	
62	198827101	. . BRACKET, CAPACITOR MOUNTING	1
63	51400310Y	. . SCREW, SHEET METAL: Philips head	2
		- - * - -	
64	138200503	. . CABLE TIE	2
		(ATTACHING PARTS)	
65	51020305E	. . SCREW, MACHINE: Philips head	2
66	53110303E	. . NUT, HEXAGONAL	2
		- - * - -	
67	145525901	. . RELIEF, STRAIN: Power cable	1
68	YB0040002	. . CABLE ASSY: Power, with fuse	1
69	YC0060004	. . CABLE ASSY: Battery cable	1
70	YJ0500004	. . RECEPTACLE, TEST: 9-pin	2
		(ATTACHING PARTS)	
71	198827704	. . GASKET	2
72	55040306I	. . RIVET	4
		- - * - -	
73	YT0201005	. . RECEPTACLE, COAXIAL: Speaker	1
		(ATTACHING PARTS)	
74	198827703	. . GASKET	1
75	55040306I	. . RIVET	2
		- - * - -	
76	198810501	. . CHASSIS ASSY, RIVETED	1

* Item not illustrated

FIG & INDEX	SCC PART NUMBER	DESCRIPTION	QTY
5-2-	SR-C202KL	REMOTE SPEAKER	REF
1	198825310	. BRACKET, UNIVERSAL MOUNTING	1
		(ATTACHING PARTS)	
2	198825310	. KNOB, THREADED	2

MECHANICAL PARTS LIST (Cont)

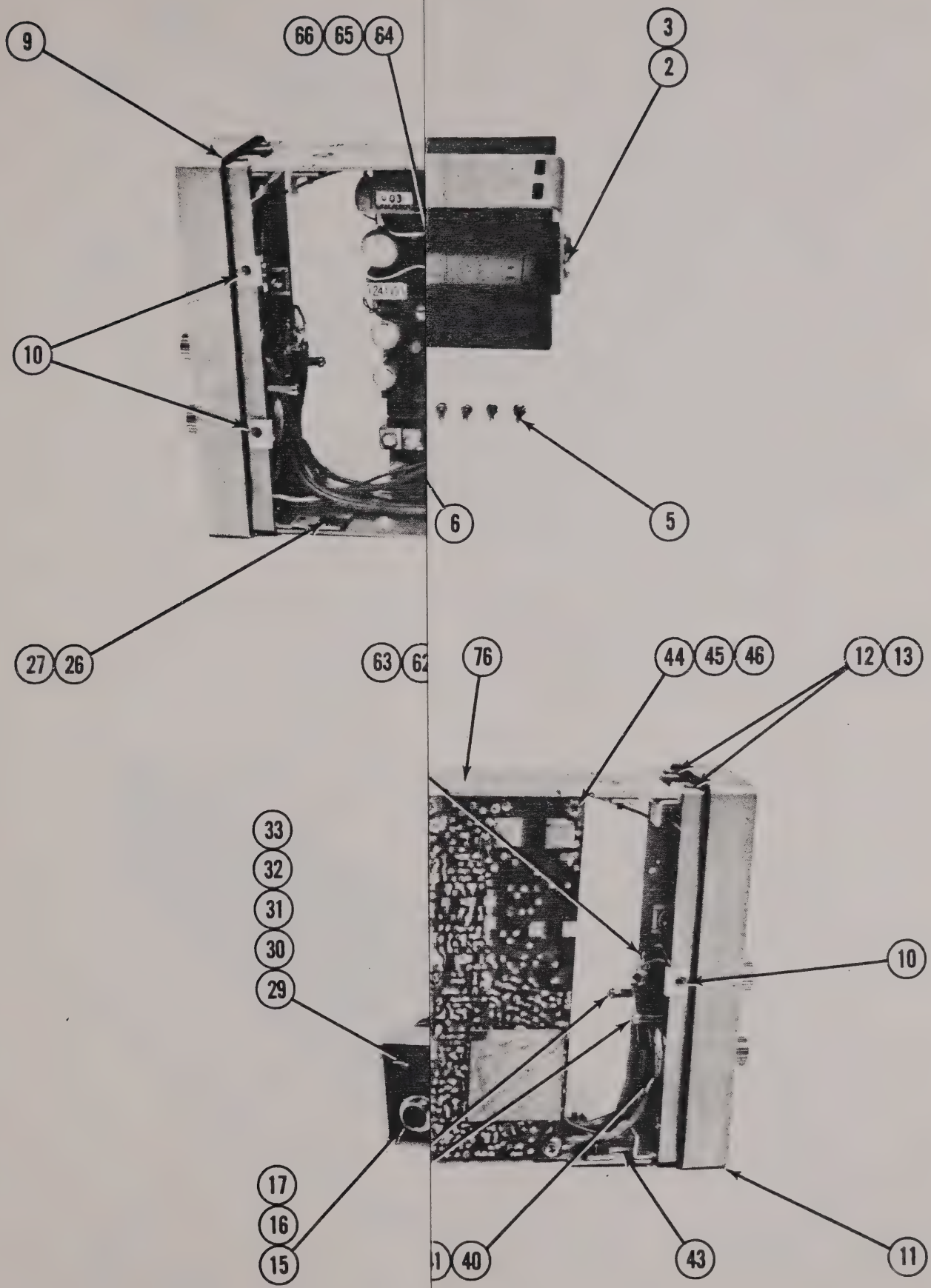
FIG & INDEX	SCC PART NUMBER	DESCRIPTION	QTY
5-2-3	198816010	. MOUNTING: Rubber	2
		- - * - -	
	No Number	. SPEAKER ASSY	1
4	198840110	. . GRILLE, FRONT	1
		(ATTACHING PARTS)	
5	51140316E	. . SCREW, MACHINE: Oval head	4
6	198810110	. . STANDOFF, THREADED	4
		- - * - -	
7	198820310	. . . NAMEPLATE	1
8	ZD0300001	. . . CABLE ASSY, AUDIO	1
9	QJ1510101	. . . SPEAKER, DYNAMIC	1
		(ATTACHING PARTS)	
10	51020305E	. . . SCREW, MACHINE: Round head	4
11	54040302N	. . . WASHER, SPRING	8
		- - * - -	
12	198816011	. . PLATE, THREADED	2
		(ATTACHING PARTS)	
13	51042608E	. . SCREW, MACHINE: Round head	4
		(ATTACHING PARTS)	
		- - * - -	
14	198806410	. . CASE	1

FIG & INDEX	SCC PART NUMBER	DESCRIPTION	QTY
5-3-	SR-CMP03D	HAND MICROPHONE	REF
	SR-CMP04D	HAND MICROPHONE	REF
	No Number	. MICROPHONE ASSY	1
		(ATTACHING PARTS)	
1	51380318B	. SCREW, SELF-TAPPING: Philips head	3
		- - * - -	

MECHANICAL PARTS LIST (Cont)

FIG & INDEX	SCC PART NUMBER	DESCRIPTION	QTY
5-3-	200200100	. . CASE ASSY	1
*2	198825710	. . . CASE, FRONT	1
*3	198827010	. . . LEVER, SWITCH	1
*4	198806411	. . . CASE, REAR	1
5	200215001	. . . . NAMEPLATE (SR-CMP03D)	1
	200215002	. . . . NAMEPLATE (SR-CMP04D)	1
		(ATTACHING PARTS)	
6	51040306E	. . . . SCREW, MACHINE: Flat head	1
7	51040806E	. . . . SCREW, MACHINE: Flat head	1
8	53110303E	. . . . NUT, HEXAGONAL	1
9	G2031650W	. . . . LUG, TERMINAL	1
		- - * - -	
10	SS0202024	. . SWITCH: Spring loaded	1
11	EA1060161	. . CAPACITOR, FIXED, ELECTRO-LYTIC: 10 uf; 16V DC	1
**11A	EW1050105	. . CAPACITOR, FIXED, ELECTRO-LYTIC: 1.0 uf; 50V DC	1
**11B	DF1739303	. . CAPACITOR, FIXED, FILM: 0.039 uf; ±20%	1
12	RC1010314	. . RESISTOR, FIXED, COMPOSITION: 10,000 ohms; ±10%; 1/4 watt	1
**12A	RC1068214	. . RESISTOR, FIXED, COMPOSITION: 6800 ohms; ±10%; 1/4 watt	1
**12B	RC1047114	. . RESISTOR, FIXED, COMPOSITION: 470 ohms; ±10%; 1/4 watt	1
	200200200	. . PICKUP ASSY	1
13	MS1000003	. . . PICKUP, MICROPHONE	1
14	200200010	. . . RING: Polythylene	1
	No Number	. . CABLE ASSY, CONNECTING	1
15	YP9000003	. . . CONNECTOR: 4-pin	1
16	YB0020020	. . . CORD, COILED: 3-conductor	1

* Item not procurable separately; order next higher assembly
** Item not illustrated

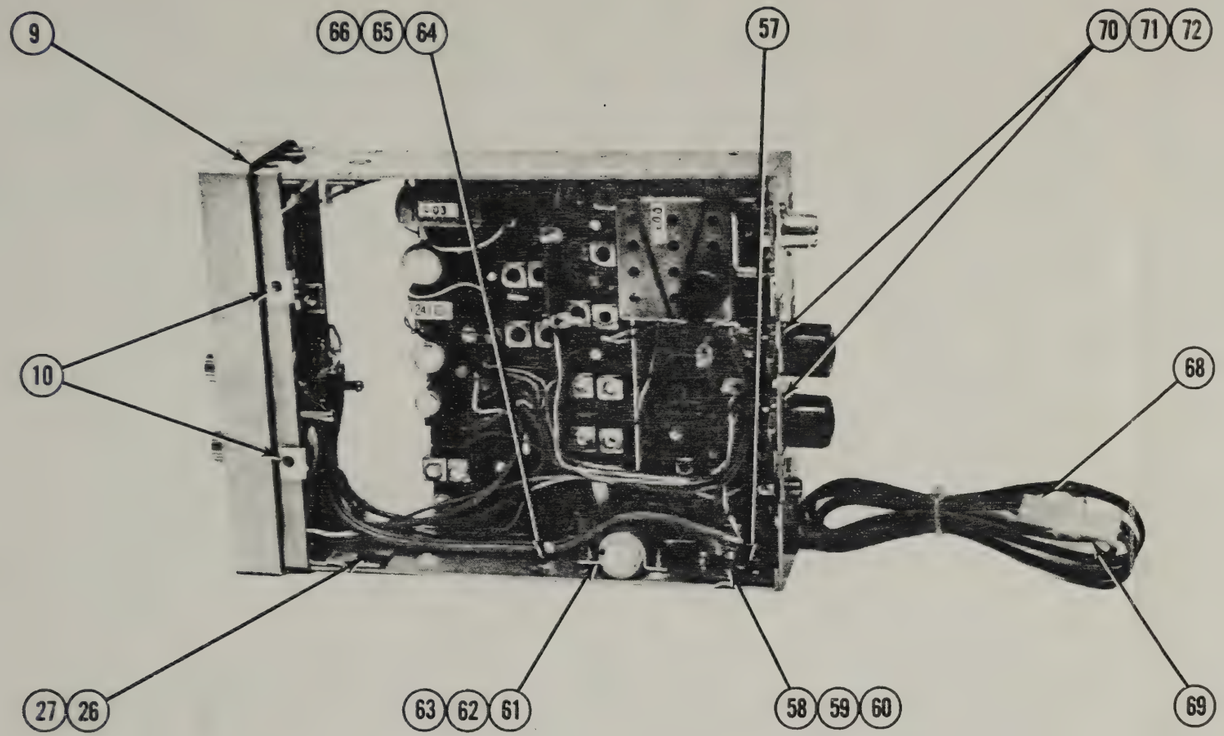


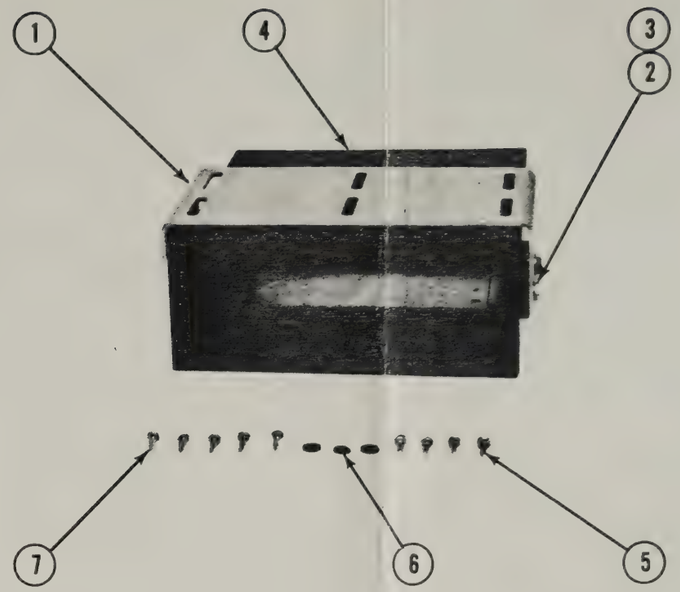
. MECHANICAL ASSEMBLY - MODEL SR-C803L
OLID-STATE INDUSTRIAL RADIOTELEPHONE

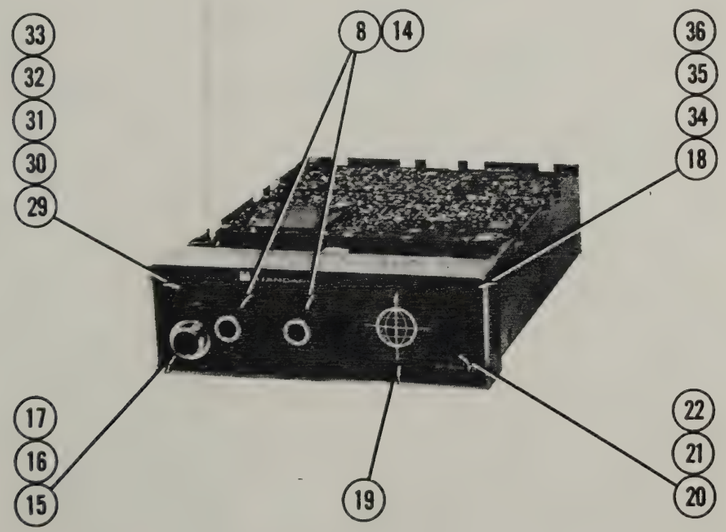
MECHANICAL PARTS LIST (Cont)

FIG & INDEX	SCC PART NUMBER	DESCRIPTION	QTY
5-3-	200200100	. . CASE ASSY	1
*2	198825710	. . . CASE, FRONT	1
*3	198827010	. . . LEVER, SWITCH	1
*4	198806411	. . . CASE, REAR	1
5	200215001	. . . . NAMEPLATE (SR-CMP03D)	1
	200215002	. . . . NAMEPLATE (SR-CMP04D)	1
		(ATTACHING PARTS)	
6	51040306E	. . . . SCREW, MACHINE: Flat head	1
7	51040806E	. . . . SCREW, MACHINE: Flat head	1
8	53110303E	. . . . NUT, HEXAGONAL	1
9	G2031650W	. . . . LUG, TERMINAL	1
		- - * - -	
10	SS0202024	. . SWITCH: Spring loaded	1
11	EA1060161	. . CAPACITOR, FIXED, ELECTRO-LYTIC: 10 uf; 16V DC	1
**11A	EW1050105	. . CAPACITOR, FIXED, ELECTRO-LYTIC: 1.0 uf; 50V DC	1
**11B	DF1739303	. . CAPACITOR, FIXED, FILM: 0.039 uf; ±20%	1
12	RC1010314	. . RESISTOR, FIXED, COMPOSITION: 10,000 ohms; ±10%; 1/4 watt	1
**12A	RC1068214	. . RESISTOR, FIXED, COMPOSITION: 6800 ohms; ±10%; 1/4 watt	1
**12B	RC1047114	. . RESISTOR, FIXED, COMPOSITION: 470 ohms; ±10%; 1/4 watt	1
	200200200	. . PICKUP ASSY	1
13	MS1000003	. . . PICKUP, MICROPHONE	1
14	200200010	. . . RING: Polythylene	1
	No Number	. . CABLE ASSY, CONNECTING	1
15	YP9000003	. . . CONNECTOR: 4-pin	1
16	YB0020020	. . . CORD, COILED: 3-conductor	1

* Item not procurable separately; order next higher assembly
** Item not illustrated







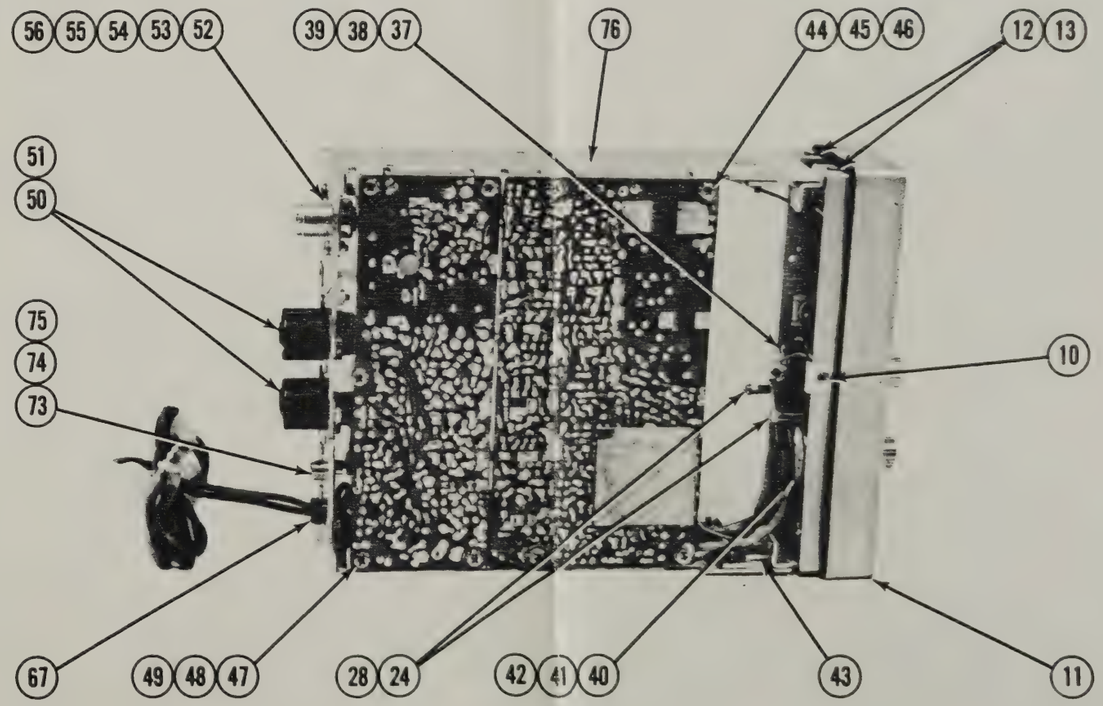


FIGURE 5-1. MECHANICAL ASSEMBLY - MODEL SR-C803L
VHF/FM SOLID-STATE INDUSTRIAL RADIOTELEPHONE

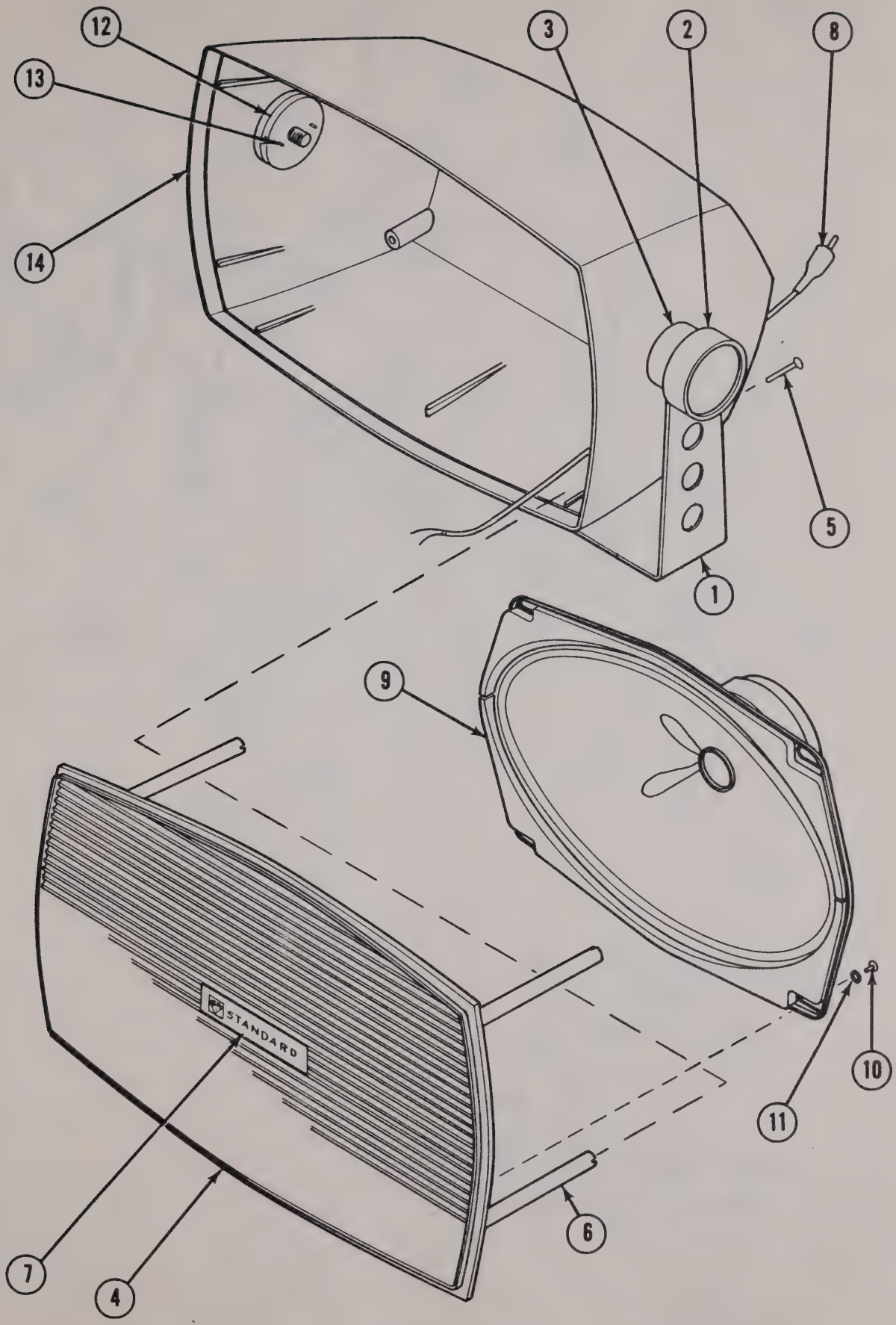


FIGURE 5-2. MECHANICAL ASSEMBLY - MODEL SR-C202K
REMOTE SPEAKER

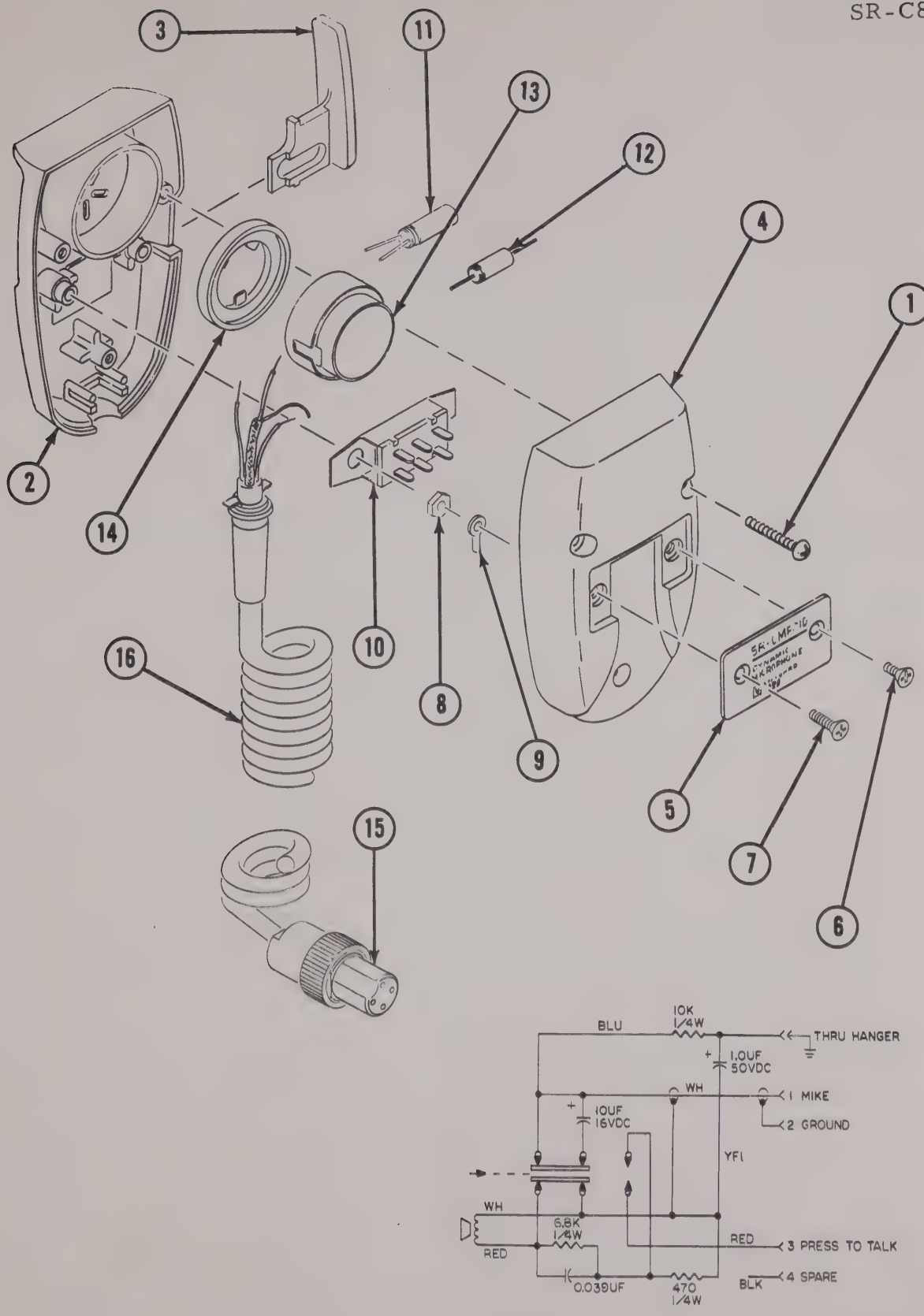


FIGURE 5-3. MECHANICAL ASSEMBLY - MODEL SR-CMP03D AND SR-CMP04D HAND MICROPHONE

C803LA

INSTRUCTION MANUAL SUPPLEMENT

VHF/FM SOLID-STATE BUSINESS/INDUSTRIAL TRANSCEIVER

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I. INTRODUCTION

This Appendix contains maintenance information for the STANDARD COMMUNICATIONS CORP. Model C803LA VHF/FM Solid-State Business/Industrial Radiotelephone. Due to the similarities that exist between this unit and the Model C803L, only those areas where differences occur will be covered in detail. For all other information, refer to the basic Model C803L instruction manual.

II. DESCRIPTION

The Model C803LA employs the same physical configuration as the C803L. The operation and control functions are identical for both units. The major differences are in the receiver section, and these are summarized as follows:

1. RECEIVER

The C803LA receiver affords increased sensitivity; i. e., 0.5 uV for 20 dB quieting, and 0.3 uV for squelch threshold. In addition, the adjacent channel selectivity has been increased to better than 90 dB (20 dB quieting method), and the spurious and image rejection has been increased to better than 80 dB. This improved performance has been accomplished by addition of a high-frequency (11.7 MHz) crystal filter and other minor circuit changes in the RF and first mixer stages. The remainder of the receiver circuitry is essentially the same as that employed in the C803L.

2. TRANSMITTER

The C803LA transmitter is basically the same as employed in the C803L. A low-pass filter (not on the transmitter board) has been added in the antenna circuit to improve harmonic rejection.

III. THEORY OF OPERATION

1. POWER INPUT CIRCUITRY (Refer to Figure III-I)

The power input circuitry is essentially the same in the two units. The difference is in application of the +12V DC input from the LC filter (L322 and C373) to terminals "P19" and "P43" on the receiver and transmitter circuit boards, respectively.

2. RECEIVER CIRCUITRY (Refer to Figure III-I)

The receiver circuitry differs primarily in the "front end" stages of the two units, and also in that no AGC circuit is employed. An audio input transformer has also been incorporated between the FM detector output, and the first audio stage. A description of the circuitry follows:

a. RF Amplifiers

The RF input signal from the antenna relay is resonated by a "Hi-Q" double tuned circuit, and coupled to gate "1" of the first RF amplifier, Q1, and forward bias is applied to gate "2". Metal Oxide Silicon Field Effect Transistors (MOSFET) are employed in the RF amplifier and first mixer stages to minimize spurious and inter-modulation responses, and provide low-noise conversion.

The output signal from the drain of Q1 is coupled through a second double tuned circuit to gate "1" of the second RF amplifier, Q2. Forward bias is also applied to gate "2" of Q2, and the output from the drain is coupled through a third double tuned circuit to gate "1" of the first mixer, Q3.

Diode D1 (a diode connected NPN transistor) effectively "grounds" the receiver input during "transmit" to protect the first RF amplifier, Q1.

b. First Mixer

The 148 to 174 MHz input signal is applied at gate "1" of Q3, while the first local oscillator injection signal (136.3 to 162.3

MHz) is applied at gate "2", together with forward bias. The 11.7 MHz difference signal at the drain of Q3 is then coupled through a high-frequency crystal filter to the base of the 11.7 MHz IF amplifier, Q4.

The input signal (148 to 174 MHz) at gate "1" or Q3 is detected by D2 to provide a DC level applied through terminal "P3" to terminal "RT2" on the receiver test receptacle. Similarly, the first local oscillator injection signal at gate "2" is detected by D3 to provide a DC level at the top of R40. These DC levels may be used to isolate a malfunction in troubleshooting, or monitored during alignment when the preceeding tuned circuits are adjusted.

c. 11.7 MHz Crystal Filter and IF Amplifier

The 11.7 MHz signal from Q3 is applied through a bandpass filter to obtain the first IF passband characteristics. The filter employs two crystals, Y1 (11.6925 MHz) and Y2 (11.7075 MHz), is a half-lattice configuration with the input applied across L7 and the series inductor L8, and the output taken from L9 and applied to the base of Q4. The 11.7 MHz signal is amplified by Q4, then coupled through a double tuned circuit to the base of the second mixer, Q5.

The filter circuit produces a steep skirted shape factor to attenuate signals falling outside of the required IF passband, thus improving the overall receiver selectivity.

d. Receiver Test Points

The same receiver test points are available on the C803LA as in the C803L. The first local oscillator injection signal is not available at the "RT" receptacle however. This level may be measured at the top of R40, or at the junction of R40 and C69 on the bottom of the receiver circuit board.

3. TRANSMITTER CIRCUITRY (Refer to Figure III-I)

The transmitter circuitry differs primarily in the addition of a low-pass filter in the antenna circuitry. This filter is located adjacent to the ANT receptacle, and is comprised of L323 and C601 thru C604. The filter affords additional rejection of harmonics or spurious emissions from the transmitter.

IV. MAINTENANCE

The same basic maintenance procedures apply for the C803LA as for the C803L. The major differences are in the test receptacle connections and alignment procedures for the RF circuitry. These differences are summarized as follows:

1. PERFORMANCE TESTS

The C803LA performance test procedure is the same as described for the C803L, however check that the receiver achieves 20 dB quieting at a maximum signal input of 0.5 uV, and the squelch threshold is 0.3 uV maximum.

2. TEST RECEPTACLE CONNECTIONS AND FUNCTIONS

a. Receiver

RT1 - Chassis ground, meter return for measurements.

RT2 - Positive DC level representing RF signal at first mixer; nominally 35 uA with 0.1V signal input at ANT receptacle.

RT3 - Not used.

RT4 - Positive DC level representing 455 kHz second IF signal; nominally 15 uA with 100 uV signal input at ANT receptacle.

RT5 - "Push-to-talk" lead for remote connection, parallels pin "3" of MIC receptacle.

RT6 - FM detector output; connection point for 25-0-25 uA DC meter (or MFTP-1 test panel) when adjusting L16 and L17 for detector "zero crossover".

RT7 - Audio output for remote connection, parallels SPKR

receptacle and pin "4" of MIC receptacle (metered during receiver 20 dB quieting measurements).

RT8 - +13.8V DC when power applied to radiotelephone.

RT9 - +13.8V DC in "receive" mode only.

b. Transmitter

TT1 - Same as RT1.

TT2 - Test point "P33" (Q34 emitter); connection point for 0-50 uA DC meter (or MFTP-1 test panel) during initial adjustment of L302 and L303; nominally 30 uA in "transmit" mode.

TT3 - Test point "P34" (Q35 emitter); connection point for 0-50 uA DC meter (or MFTP01 test panel) during adjustment of L304 and L305, and final peaking of L302 and L303; nominally 35 uA in "transmit" mode only.

TT4 - Test point "P35" (Q36/Q37 emitter); connection point for 0-50 uA DC meter (or MFTP-1 test panel) during adjustment of L306 and L307; nominally 30 uA in "transmit" mode.

TT5/TT6 - Not used.

TT7 - +13.8V DC in "transmit" mode, used to "key" accessory SR-CL25 VHF/FM Power Booster.

TT8 - +13.8V DC input to radiotelephone; "hot" at all times radiotelephone is connected to power source.

TT9 - +13.8V DC in "transmit" mode only.

3. CIRCUIT BOARD REMOVAL AND REPLACEMENT

Removal and replacement of the circuit boards is basically the same as described for the C803L. Some interwiring changes exist however due to changes in function for some of the test receptacle pins. Refer to Figures III-I thru III-II , and make connections during replacement as follows:

a. Receiver Circuit Board

(1) Connect the orange lead from "TT9" to terminal "P15", and the red lead form "RT9" to "P18".

(2) Connect the VOL control (R71) cable shield to terminal "P11", white lead to "P10", and red lead to "P9".

(3) Connect the SQL control (R72) cable shield to terminal "P14", white lead to "P13", and red lead to "P12".

(4) Connect the brown lead from "RT6" to terminal "P8", and the red lead from inductor L322 to "P19".

(5) Connect the black lead from the SPKR receptacle to terminal "P17", and the white lead to "P16".

(6) Connect the green lead from "RT2" to terminal "P3", and the green lead from "RT4" to "P7".

(7) Connect the green lead from pilot lamp PL2 to terminal "P21".

(8) Connect the coaxial cable from the transmitter, shield to terminal "P2", and center conductor to "P1".

(9) Solder the blue lead from receptacle J601 to the loop at the top of R75 (junction of R75 and C115).

(10) Solder the violet lead from receptacle J601 to the loop at the top of R79.

b. Transmitter Circuit Board

(1) Connect the yellow and red lead from inductor L322 to terminal "P47", and the red lead to "P43".

(2) Connect the red lead from "RT9" to terminal "P44", and the red lead from "TT9" to "P46".

(3) Connect the orange lead from "RT5" to terminal "P50".

(4) Connect the yellow lead from "TT2" to terminal "P33", the green lead from "TT3" to "P34", and the orange lead from "TT4" to "P35".

(5) Connect the coaxial cable from the receiver, shield to terminal "P39", and center conductor to "P38".

(6) Connect the coaxial cable from the low-pass filter, shield to terminal "P41", and center conductor to "P40".

(7) Connect the cable from the MIC receptacle, shield to terminal "P49", and grey lead to "P48".

(8) Connect the red lead from capacitor C373 to terminal "P51".

(9) Solder the green lead from receptacle J601 to the top of R360 (junction of R360 and C379).

4. ALIGNMENT

The same basic alignment procedures apply for the C803LA as for the C803L, the only differences are in the receiver. The receiver may be aligned using the SCC CBTF-1 and MFTB-1 if appropriate connections are made to the circuit board, or using a 0-50 uA and 25-0-25 uA DC meters. The test equipment required is the same as specified for the C803L, and be sure to observe the CAUTION regarding slug adjustments. Align the receiver tuned circuits as follows (refer to Figures III-I and III-II):

NOTE

When using a separate meter, connect it to the appropriate test receptacle terminal where a switch position is called out for the MFTP-1 test panel.

a. FM Detector Alignment

(1) Proximity couple a 455 kHz (±10 Hz) CW signal to the second IF filter subassembly, and connect a 25-0-25 uA DC meter between pins "1" and "6" of the "RT" receptacle (or use meter "M3" on the MFTP-1).

(2) Adjust the signal generator output amplitude to approximately 100 uV, and using a SCC AT-1 alignment tool adjust the cores in L16 (pink) and L17 (blue) until the meter indicates "zero".

(3) Disconnect the signal generator from the IF filter and connect it to the ANT receptacle.

b. Local Oscillator Alignment

(1) Connect an appropriate 0-50 uA DC meter as follows:

(a) If using the MFTP-1, temporarily connect a lead between pin "RT3" and the junction of R40 and C69 on the bottom of the circuit board, and set "S2" on the test panel to the "RT3" position.

(b) If using a separate meter, connect the positive lead to the junction of R40 and C69, and ground the negative lead to the chassis.

(2) Adjust the cores in L12 thru L15 for maximum response on the meter.

(3) Disconnect the meter (or jumper) from step "(1)".

c. RF and 11.7 MHz IF Alignment

(1) Adjust the signal generator to provide an approximate 50 to 100 uV CW output at the proper input frequency.

(2) Set switch "S2" on the test panel to "RT2" and sequentially adjust the cores in L1 thru L6 for maximum response on

the meter. Reduce the signal generator output as required to maintain an "on scale" reading on the meter.

(3) Set switch "S2" on the test panel to "RT4" and sequentially adjust toe cores in L7 thru L11 for maximum response on the meter. Reduce the signal generator output as required to maintain an "on scale" reading on the meter.

(4) Repeat the receiver performance tests to verify the 20 dB quieting and squelch threshold sensitivities.

d. Receiver Crystal Adjustment

Adjust the receiver crystals to frequency as described for the C803L.

5. TONE SQUELCH INSTALLATION

Installation of the tone squelch board is basically the same as for the C803L. Interconnect the wiring as described in Paragraph "IV-3-c" and perform the encoder and decoder tests and adjustments as described for the C803L.

6. CHANGING OPERATING FREQUENCIES

Changing operating frequencies is basically the same as described for the C803L. Install the proper capacitors for the frequency range (refer to Table IV-I) and retune the transmitter as described for the C803L. Retune toe receiver as described in Paragraph "IV-4" (refer to Figures III-I thru III-II).

TABLE IV-I. FREQUENCY VS. CAPACITANCE

FREQUENCY RANGE - 144.00 to 150.80 MHz

REF DESIG	SCC PART NUMBER	DESCRIPTION
C1	DD1615001	CAPACITOR, FIXED, CERAMIC: 15 pf; ±10%
C2	DD1650001	CAPACITOR, FIXED, CERAMIC: 50 pf; ±10%
C5	DD1101001	CAPACITOR, FIXED, CERAMIC: 1 pf; ±0.5 pf
C6	DD1207001	CAPACITOR, FIXED, CERAMIC: 7 pf; ±1 pf
C10	DD1210001	CAPACITOR, FIXED, CERAMIC: 10 pf; ±1 pf
C15		Same as C5
C16		Same as C6
C20		Same as C10

REF DESIG	SCC PART NUMBER	DESCRIPTION
C25		Same as C5
C26		Same as C6
C59		Same as C10
C314	DF3656001	CAPACITOR, FIXED, MICA: 56 pf; ±10%
C317		Same as C314
C322	DF3620001	CAPACITOR, FIXED, MICA: 20 pf; ±10%
C323	DF3651001	CAPACITOR, FIXED, MICA: 51 pf; ±10%
C328		Same as C2
C380	DF3610002	CAPACITOR, FIXED, MICA: 10 pf; ±10%

FREQUENCY RANGE - 150.80 to 156.25 MHz

REF DESIG	SCC PART NUMBER	DESCRIPTION
C1	DD1615001	CAPACITOR, FIXED, CERAMIC: 15 pf; ±10%
C2	DD1650001	CAPACITOR, FIXED, CERAMIC: 50 pf; ±10%
C5		Not used
C6	DD1207001	CAPACITOR, FIXED, CERAMIC: 7 pf; ±1 pf
C10	DD1210001	CAPACITOR, FIXED, CERAMIC: 10 pf; ±1 pf
C15		Not used
C16		Same as C6
C20		Same as C10

REF DESIG	SCC PART NUMBER	DESCRIPTION
C25		Not used
C26		Same as C6
C59		Not used
C314	DF3651001	CAPACITOR, FIXED, MICA: 51 pf; ±10%
C317		Same as C314
C322	DF3610002	CAPACITOR, FIXED, MICA: 10 pf; ±10%
C323		Same as C314
C328		Same as C2
C380		Not used

FREQUENCY RANGE - 156.25 to 162.00 MHz

REF DESIG	SCC PART NUMBER	DESCRIPTION
C1	DD1615001	CAPACITOR, FIXED, CERAMIC: 15 pf; ±10%
C2	DD1650001	CAPACITOR, FIXED, CERAMIC: 50 pf; ±10%
C5		Not used
C6	DD1207001	CAPACITOR, FIXED, CERAMIC: 7 pf; ±1 pf
C10	DD1210001	CAPACITOR, FIXED, CERAMIC: 10 pf; ±1 pf
C15		Not used
C16		Same as C6
C20		Same as C10

REF DESIG	SCC PART NUMBER	DESCRIPTION
C25		Not used
C26		Same as C6
C59		Not used
C314	DF3651001	CAPACITOR, FIXED, MICA: 51 pf; ±10%
C317		Same as C314
C322	DF3610002	CAPACITOR, FIXED, MICA: 10 pf; ±10%
C323	DF3639001	CAPACITOR, FIXED, MICA: 39 pf; ±10%
C328		Same as C2
C380		Not used

TABLE IV-I. FREQUENCY VS. CAPACITANCE (Cont'd)

FREQUENCY RANGE - 162.00 to 174.00 MHz

REF DESIG	SCC PART NUMBER	DESCRIPTION
C1	DD1210001	CAPACITOR, FIXED, CERAMIC: 10 pf; ±1 pf
C2	DD1640001	CAPACITOR, FIXED, CERAMIC: 40 pf; ±10%
C5		Not used
C6	DD1205001	CAPACITOR, FIXED, CERAMIC: 5 pf; ±1 pf
C10	DD1207001	CAPACITOR, FIXED, CERAMIC: 7 pf; ±1 pf
C15		Not used
C16		Same as C6
C20		Same as C10
C25		Not used
C26		Same as C6
C59		Not used
C314	DF3651001	CAPACITOR, FIXED, MICA: 51 pf; ±10%
C317	DF3639001	CAPACITOR, FIXED, MICA: 39 pf; ±10%
C322	DF3610002	CAPACITOR, FIXED, MICA: 10 pf; ±10%
C323		Same as C317
C328		Same as C2
C380		Not used

V. PARTS LIST

TABLE V-I. ELECTRICAL PARTS LIST - C803LA

REF DESIG	SCC PART NUMBER	DESCRIPTION
C1		CAPACITOR, FIXED, CERAMIC: Value dependent upon frequency range (refer to Table IV-I)
C2		CAPACITOR, FIXED, CERAMIC: Value dependent upon frequency range (refer to Table IV-I)
C3	DD1101001	CAPACITOR, FIXED, CERAMIC: 1 pf; ±0.5 pf
C4	DD1600601	CAPACITOR, FIXED, CERAMIC: 0.6 pf; ±10%
C5		CAPACITOR, FIXED, CERAMIC: Value dependent upon frequency range (refer to Table IV-I)
C6		CAPACITOR, FIXED, CERAMIC: Value dependent upon frequency range (refer to Table IV-I)
C7	DD1615001	CAPACITOR, FIXED, CERAMIC: 15 pf; ±10%
C8	DK1710201	CAPACITOR, FIXED, CERAMIC: 0.001 uf; ±20%
C9		Same as C8
C10		CAPACITOR, FIXED, CERAMIC: Value dependent upon frequency range (refer to Table IV-I)
C11		Same as C3
C12	DD1600801	CAPACITOR, FIXED, CERAMIC: 0.8 pf; ±10%
C13 and C14		Same as C8
C15		CAPACITOR, FIXED, CERAMIC: Value dependent upon frequency range (refer to Table IV-I)
C16		CAPACITOR, FIXED, CERAMIC: Value dependent upon frequency range (refer to Table IV-I)
C17		Same as C7
C18 and C19		Same as C8
C20		CAPACITOR, FIXED, CERAMIC: Value dependent upon frequency range (refer to Table IV-I)
C21		Same as C3
C22		Same as C4
C23 and C24		Same as C8
C25		CAPACITOR, FIXED, CERAMIC: Value dependent upon frequency range (refer to Table IV-I)
C26		CAPACITOR, FIXED, CERAMIC: Value dependent upon frequency range (refer to Table IV-I)
C27		Same as C7
C28		Not used
C29	DD1205001	CAPACITOR, FIXED, CERAMIC: 5 pf; ±1 pf
C30 and C31		Same as C8
C32	DD1610101	CAPACITOR, FIXED, CERAMIC: 100 pf; ±10%
C33	DD1530101	CAPACITOR, FIXED, CERAMIC: 300 pf; ±10%
C34		Same as C8
C35	DD1630001	CAPACITOR, FIXED, CERAMIC: 30 pf; ±10%
C36	DK1710301	CAPACITOR, FIXED, CERAMIC: 0.01 uf; ±20%
C37	DD1660001	CAPACITOR, FIXED, CERAMIC: 60 pf; ±10%
C38		Same as C33
C39		Same as C12
C40 and C41		Same as C36
C42		Same as C4
C43		Same as C36
C44		Same as C35
C45	DK1750201	CAPACITOR, FIXED, CERAMIC: 0.005 uf; ±20%
C46	DF1740301	CAPACITOR, FIXED, FILM: 0.04 uf; ±20%
C47		Same as C46
C48	DF3610002	CAPACITOR, FIXED, MICA: 10 pf; ±10%
C49	DF3610102	CAPACITOR, FIXED, MICA: 100 pf; ±10%
C50	DF3620102	CAPACITOR, FIXED, MICA: 200 pf; ±10%
C51	DF3651001	CAPACITOR, FIXED, MICA: 51 pf; ±10%
C52		Same as C36
C53		Not used
C54	DD1620001	CAPACITOR, FIXED, CERAMIC: 20 pf; ±10%
C55		Same as C36
C56	DD1202001	CAPACITOR, FIXED, CERAMIC: 2 pf; ±1 pf
C57		Same as C4

REF DESIG	SCC PART NUMBER	DESCRIPTION
C58		Same as C45
C59		CAPACITOR, FIXED, CERAMIC: Value dependent upon frequency range (refer to Table IV-I)
C60	DF3668001	CAPACITOR, FIXED, MICA: 68 pf; ±10%
C61		Same as C8
C62		Same as C45
C63		Same as C3
C64		Same as C8
C65		Same as C4
C66		Same as C3
C67	DD1203001	CAPACITOR, FIXED, CERAMIC: 3 pf; ±1 pf
C68		Same as C67
C69		Same as C8
C70		Same as C36
C71	DD1620101	CAPACITOR, FIXED, CERAMIC: 200 pf; ±10%
C72		Same as C37
C73		Same as C51
C74	DK1647101	CAPACITOR, FIXED, CERAMIC: 470 pf; ±10%
C75 thru C79		Same as C74
C80	DF1747201	CAPACITOR, FIXED, FILM: 0.005 uf; ±20%
C81 thru C83		Same as C80
C84	DD1616101	CAPACITOR, FIXED, CERAMIC: 160 pf; ±10%
C85	DF1733301	CAPACITOR, FIXED, FILM: 0.03 uf; ±20%
C86 and C87		Not used
C88	DK1633101	CAPACITOR, FIXED, CERAMIC: 330 pf; ±10%
C89		Not used
C90	DF1710402	CAPACITOR, FIXED, FILM: 0.1 uf; ±20%
C91	DD1620103	CAPACITOR, FIXED, CERAMIC: 200 pf; ±10%
C92	DD1210004	CAPACITOR, FIXED, CERAMIC: 10 pf; ±1 pf
C93	DF1722301	CAPACITOR, FIXED, FILM: 0.02 uf; ±20%
C94		Same as C90
C95	EA4760161	CAPACITOR, FIXED, ELECTROLYTIC: 50 uf; 16V DC
C96		Same as C90
C97		Same as C95
C98	DD2640101	CAPACITOR, FIXED, CERAMIC: 400 pf; ±10%
C99		Same as C49
C100	ED1050102	CAPACITOR, FIXED, ELECTROLYTIC: 1 uf; 10V DC
C101 thru C103		Same as C80
C104		Same as C90
C105		Not used
C106		Same as C93
C107 and C108		Same as C85
C109	DF1710301	CAPACITOR, FIXED, FILM: 0.01 uf; ±20%
C110		Same as C109
C111		Same as C46
C112		Not used
C113		Same as C109
C114	DF1710201	CAPACITOR, FIXED, FILM: 0.001 uf; ±20%
C115		Same as C46
C116		Same as C109
C117	EA1060101	CAPACITOR, FIXED, ELECTROLYTIC: 10 uf; 10V DC
C118		Same as C117
C119		Same as C93
C120		Same as C90
C121		Same as C117
C122	DK1730201	CAPACITOR, FIXED, CERAMIC: 0.003 uf; ±20%
C123	EE4760161	CAPACITOR, FIXED, ELECTROLYTIC: 47 uf; 16V DC
C124		Same as C109
C125	EA3360161	CAPACITOR, FIXED, ELECTROLYTIC: 30 uf; 16V DC
C126		Same as C46
C127	EA3370161	CAPACITOR, FIXED, ELECTROLYTIC: 330 uf; 16V DC
C128	EA4770161	CAPACITOR, FIXED, ELECTROLYTIC: 470 uf; 16V DC
C129 thru C300		Not used

TABLE V-I. ELECTRICAL PARTS LIST - C803LA (Cont'd)

REF DESIG	SCC PART NUMBER	DESCRIPTION
C301	DF3616102	CAPACITOR, FIXED, MICA: 160 pf; ±10%
C302	DD1550001	CAPACITOR, FIXED, CERAMIC: 50 pf; ±5%
C303 thru C305		Same as C302
C306	DK1810301	CAPACITOR, FIXED, CERAMIC: 0.01 uf; +100%, -0
C307	DD1512101	CAPACITOR, FIXED, CERAMIC: 120 pf; ±5%
C308		Same as C8
C309	DF3668003	CAPACITOR, FIXED, MICA: 68 pf; ±10%
C310		Same as C306
C311	DD1102001	CAPACITOR, FIXED, CERAMIC: 2 pf; ±0.5 pf
C312		Same as C309
C313	DD1614101	CAPACITOR, FIXED, CERAMIC: 140 pf; ±10%
C314		CAPACITOR, FIXED, MICA: Value dependent upon frequency range (refer to Table IV-I)
C315		Same as C306
C316		Same as C311
C317		CAPACITOR, FIXED, MICA: Value dependent upon frequency range (refer to Table IV-I)
C318		Same as C302
C319	DF3639001	CAPACITOR, FIXED, MICA: 40 pf; ±10%
C320		Same as C8
C321		Same as C29
C322		CAPACITOR, FIXED, MICA: Value dependent upon frequency range (refer to Table IV-I)
C323		CAPACITOR, FIXED, MICA: Value dependent upon frequency range (refer to Table IV-I)
C324 and C325		Not used
C326	DD1540001	CAPACITOR, FIXED, CERAMIC: 40 pf; ±5%
C327		Same as C302
C328		CAPACITOR, FIXED, CERAMIC: Value dependent upon frequency range (refer to Table IV-I)
C329 thru C332		Same as C326
C333	CT1200001	CAPACITOR, VARIABLE, CERAMIC: 0-20 pf
C334	DK1820301	CAPACITOR, FIXED, CERAMIC: 0.02 uf; +100%, -0
C335		Same as C311
C336		Same as C306
C337		Same as C117
C338 thru C341		Same as C306
C342 and C343		Not used
C344		Same as C306
C345	DK1730202	CAPACITOR, FIXED, CERAMIC: 0.003 uf; ±20%
C346	EA4750161	CAPACITOR, FIXED, ELECTROLYTIC: 5 uf; 16V DC
C347 and C348		Same as C345
C349		Same as C306
C350	EV4750161	CAPACITOR, FIXED, TANTALUM: 4.7 uf; 16V DC
C351	EV3060101	CAPACITOR, FIXED, TANTALUM: 30 uf; 10V DC
C352	DF1710302	CAPACITOR, FIXED, FILM: 0.01 uf; ±20%
C353		Same as C48
C354		Not used
C355	DF3610001	CAPACITOR, FIXED, MICA: 10 pf; ±10%
C356	EA3060101	CAPACITOR, FIXED, ELECTROLYTIC: 30 uf; 10V DC
C357 thru C359		Same as C117
C360	DF1710401	CAPACITOR, FIXED, FILM: 0.1 uf; ±20%
C361		Same as C345
C362	DF1733302	CAPACITOR, FIXED, FILM: 0.03 uf; ±20%
C363	EW3340061	CAPACITOR, FIXED, TANTALUM: 0.33 uf; 6V DC
C364		Same as C345
C365		Same as C360
C366	DF1622301	CAPACITOR, FIXED, FILM: 0.022 uf; ±10%
C367	EV3360031	CAPACITOR, FIXED, TANTALUM: 30 uf; 3V DC
C368		Same as C350
C369		Same as C117

REF DESIG	SCC PART NUMBER	DESCRIPTION
C370		Same as C306
C371		Same as C74
C372		Same as C326
C373	EA1080161	CAPACITOR, FIXED, ELECTROLYTIC: 1000uf; 16V DC
C374		Same as C355
C375 thru C378		Not used
C379		Same as C306
C380		CAPACITOR, FIXED, MICA: Value dependent upon frequency range (refer to Table IV-I)
C381		Same as C306
C382 thru C384		Same as C302
C385 thru C387		Same as C74
C388		Same as C117
C389 thru C500		Not used
C501		Same as C333
C502 thru C534		Not used
C535		Same as C319
C536		Same as C333
C537 thru C550		Not used
C551		Same as C46
C552	EV1060161	CAPACITOR, FIXED, TANTALUM: 10 uf; 16V DC
C553	EA1050501	CAPACITOR, FIXED, ELECTROLYTIC: 1 uf; 50V DC
C554 thru C600		Not used
C601	DD1510001	CAPACITOR, FIXED, CERAMIC: 10 pf; ±5%
C602 and C603		Same as C333
C604		Same as C601
D1	HT305351B	SEMICONDUCTOR DEVICE, DIODE: Diode connected NPN transistor
D2	HD1000101	SEMICONDUCTOR DEVICE, DIODE: Germanium
D3 thru D6		Same as D2
D7	HD3000309	SEMICONDUCTOR DEVICE, DIODE: Silicon zener
D8	HD2000206	SEMICONDUCTOR DEVICE, DIODE: Silicon
D9 and D10		Same as D2
D11	HV0000605	SEMICONDUCTOR DEVICE, DIODE: Diode connected NPN transistor
D12 thru D30		Not used
D31		Same as D7
D32		Same as D2
D33 and D34		Same as D8
D35	HD2000110	SEMICONDUCTOR DEVICE, DIODE: Silicon
F1	FS1020001	FUSE 2 ampere; 3AG
FL1	FF1000450	FILTER, INTERMEDIATE FREQUENCY: 455 kHz ceramic filter
K1 thru K300		Not used
K301	LY2012001	RELAY: DPDT; 12V DC coil
L1	LA1202601	INDUCTOR, RADIO FREQUENCY: RF input
L2 thru L6		Same as L1
L7	LI1018604	INDUCTOR, RADIO FREQUENCY: 1st Mixer output
L8	LI1015607	INDUCTOR, RADIO FREQUENCY: 11.7 MHz Filter output
L9	LI1015608	INDUCTOR, RADIO FREQUENCY: 11.7 MHz Filter output
L10	LI1018605	INDUCTOR, RADIO FREQUENCY: 11.7 MHz IF output
L11	LI1018606	INDUCTOR, RADIO FREQUENCY: 2nd Mixer input
L12	LA1018603	INDUCTOR, RADIO FREQUENCY: 1st Tripler output
L13	LA1018604	INDUCTOR, RADIO FREQUENCY: 2nd Tripler input
L14	LA1018611	INDUCTOR, RADIO FREQUENCY: 2nd Tripler output
L15	LA1018609	INDUCTOR, RADIO FREQUENCY: 2nd Tripler output

TABLE V-I. ELECTRICAL PARTS LIST - C803LA (Cont'd)

REF DESIG	SCC PART NUMBER	DESCRIPTION
L16	LI1001045	INDUCTOR, RADIO FREQUENCY: FM Detector
L17	LI1001046	INDUCTOR, RADIO FREQUENCY: FM Detector
L18	LC1394001	INDUCTOR, RADIO FREQUENCY: Noise Amplifier input
L19 thru L21		Same as L18
L22 thru L300		Not used
L301	LA7003003	INDUCTOR, RADIO FREQUENCY: Phase Modulator
L302	LW7008001	INDUCTOR, RADIO FREQUENCY: 1st Tripler output
L303		Same as L302
L304	LW7008002	INDUCTOR, RADIO FREQUENCY: 2nd Tripler output
L305		Same as L304
L306	LC1400001	INDUCTOR, RADIO FREQUENCY: Doubler output
L307		Same as L306
L308	LC1280001	INDUCTOR, RADIO FREQUENCY: Pre-driver output
L309		Same as L306
L310		Same as L308
L311	LC1381001	INDUCTOR, RADIO FREQUENCY: Power Amplifier input
L312 thru L317		Same as L306
L318	LF5008001	INDUCTOR, RADIO FREQUENCY: Directional Coupler
L319		Same as L311
L320	LC2226001	INDUCTOR, AUDIO FREQUENCY: 22 mH
L321		Same as L320
L322	LC2106001	INDUCTOR, POWER: 10 mH
L323	LC1600001	INDUCTOR, RADIO FREQUENCY: Low-Pass Filter
L324	LC1501001	INDUCTOR, RADIO FREQUENCY: Power Amplifier input
L325		Same as L324
L326	LC1182001	INDUCTOR, RADIO FREQUENCY: ACC Filter
PL1	IN1012003	LAMP, INCADESCENT: 12V
PL2		Same as PL1

REF DESIG	SCC PART NUMBER	DESCRIPTION
Q1	HF9000110	SEMICONDUCTOR DEVICE, TRANSISTOR: MOSFET
Q2 and Q3		Same as Q1
Q4	HT305351B	SEMICONDUCTOR DEVICE, TRANSISTOR: NPN silicon
Q5	HT800031B	SEMICONDUCTOR DEVICE, TRANSISTOR: NPN silicon
Q6 and Q7		Same as Q5
Q8	HT800031C	SEMICONDUCTOR DEVICE, TRANSISTOR: NPN silicon
Q9 thru Q11		Same as Q8
Q12 thru Q14		Same as Q5
Q15		Same as Q4
Q16 thru Q18		Same as Q8
Q19	HT306441B	SEMICONDUCTOR DEVICE, TRANSISTOR: NPN silicon
Q20	HT600011E	SEMICONDUCTOR DEVICE, TRANSISTOR: PNP silicon
Q21	HT304862B	SEMICONDUCTOR DEVICE, TRANSISTOR: NPN silicon
Q22		Same as Q21
Q23 thru Q30		Not used
Q31	HT800031A	SEMICONDUCTOR DEVICE, TRANSISTOR: NPN silicon
Q32 thru Q34		Same as Q31
Q35	HT800033C	SEMICONDUCTOR DEVICE, TRANSISTOR: NPN silicon
Q36 and Q37		Same as Q35
Q38	HT3073010	SEMICONDUCTOR DEVICE, TRANSISTOR: NPN silicon
Q39	HT8002710	SEMICONDUCTOR DEVICE, TRANSISTOR: NPN silicon
Q40 thru Q44		Same as Q31
R1	RC1015314	RESISTOR, FIXED, COMPOSITION: 15,000 ohms; ±10%; 1/4 watt
R2	RC1056314	RESISTOR, FIXED, COMPOSITION: 56,000 ohms; ±10%; 1/4 watt

TABLE V-I. ELECTRICAL PARTS LIST - C803LA (Cont'd)

REF DESIG	SCC PART NUMBER	DESCRIPTION
R3	RC1010314	RESISTOR, FIXED, COMPOSITION: 10,000 ohms; ±10%; 1/4 watt
R4	RC1010114	RESISTOR, FIXED, COMPOSITION: 100 ohms; ±10%; 1/4 watt
R5		Same as R1
R6		Same as R2
R7		Same as R3
R8 and R9		Same as R4
R10		Same as R1
R11		Same as R2
R12		Same as R3
R13		Same as R4
R14	RC1015114	RESISTOR, FIXED, COMPOSITION: 150 ohms; ±10%; 1/4 watt
R15	RC1022214	RESISTOR, FIXED, COMPOSITION: 2200 ohms; ±10%; 1/4 watt
R16	RC1056214	RESISTOR, FIXED, COMPOSITION: 5600 ohms; ±10%; 1/4 watt
R17	RC1068214	RESISTOR, FIXED, COMPOSITION: 6800 ohms; ±10%; 1/4 watt
R18	RC1022314	RESISTOR, FIXED, COMPOSITION: 22,000 ohms; ±10%; 1/4 watt
R19 and R20		Same as R15
R21		Same as R4
R22		Same as R17
R23		Same as R18
R24 and R25		Same as R15
R26	RC1015214	RESISTOR, FIXED, COMPOSITION: 1500 ohms; ±10%; 1/4 watt
R27 and R28		Same as R16
R29	RC1010214	RESISTOR, FIXED, COMPOSITION: 1000 ohms; ±10%; 1/4 watt
R30	RC1047114	RESISTOR, FIXED, COMPOSITION: 470 ohms; ±10%; 1/4 watt
R31	RC1047214	RESISTOR, FIXED, COMPOSITION: 4700 ohm; ±10%; 1/4 watt
R32		Same as R16
R33		Same as R15
R34		Same as R29
R35	RC1033114	RESISTOR, FIXED, COMPOSITION: 330 ohms; ±10%; 1/4 watt
R36		Same as R31
R37		Same as R1
R38		Same as R15
R39		Same as R26
R40		Same as R15
R41		Same as R29
R42		Same as R15
R43		Same as R1
R44		Same as R16
R45		Same as R26
R46		Same as R14
R47	RC1047314	RESISTOR, FIXED, COMPOSITION: 47,000 ohms; ±10%; 1/4 watt
R48 thru R51		Same as R47
R52 thru R56		Same as R31
R57		Same as R3
R58		Same as R31
R59	RC1082214	RESISTOR, FIXED, COMPOSITION: 8200 ohms; ±10%; 1/4 watt
R60		Same as R15
R61		Same as R26
R62 and R63		Same as R29
R64 and R65		Same as R17
R66		Same as R29
R67		Not used
R68		Same as R1
R69	RC1022114	RESISTOR, FIXED, COMPOSITION: 220 ohms; ±10%; 1/4 watt
R70		Same as R29
R71	RK1103008	RESISTOR, VARIABLE, COMPOSITION: 10,000 ohms, with switch (VOL control)
R72	RK0502003	RESISTOR, VARIABLE, COMPOSITION: 5000 ohms (SQL control)
R73 and R74		Same as R2
R75 and R76		Same as R31
R77		Same as R17

TABLE V-I. ELECTRICAL PARTS LIST - C803LA (Cont'd)

REF DESIG	SCC PART NUMBER	DESCRIPTION
R78		Same as R26
R79		Same as R2
R80		Same as R47
R81	RC1033314	RESISTOR, FIXED, COMPOSITION: 33,000 ohms; ±10%; 1/4 watt
R82	RC1022414	RESISTOR, FIXED, COMPOSITION: 220,000 ohms; ±10%; 1/4 watt
R83		Same as R30
R84	RC1050014	RESISTOR, FIXED, COMPOSITION: 50 ohms; ±10%; 1/4 watt
R85		Same as R14
R86	RC1002012	RESISTOR, FIXED, COMPOSITION: 2 ohms; ±10%; 1/2 watt
R87		Not used
R88	RC1039214	RESISTOR, FIXED, COMPOSITION: 3900 ohms; ±10%; 1/4 watt
R89 thru R300		Not used
R301	RC1027314	RESISTOR, FIXED, COMPOSITION: 27,000 ohms; ±10%; 1/4 watt
R302	RC1039314	RESISTOR, FIXED, COMPOSITION: 39,000 ohms; ±10%; 1/4 watt
R303		Same as R26
R304		Same as R31
R305		Same as R18
R306	RC1010214	RESISTOR, FIXED, COMPOSITION: 1000 ohms; ±10%; 1/4 watt
R307		Same as R31
R308		Same as R18
R309		Same as R69
R310		Same as R4
R311		Same as R2
R312		Same as R69
R313		Same as R4
R314		Same as R2
R315		Same as R69
R316		Same as R301
R317		Not used
R318		Same as R84
R319 thru R321		Not used
R322		Same as R69
R323		Same as R4

REF DESIG	SCC PART NUMBER	DESCRIPTION
R324	RC1033014	RESISTOR, FIXED, COMPOSITION: 33 ohms; ±10%; 1/4 watt
R325	RC1039114	RESISTOR, FIXED, COMPOSITION: 390 ohms; ±10%; 1/4 watt
R326		Not used
R327		Same as R31
R328		Same as R324
R329		Same as R59
R330		Same as R302
R331		Not used
R332		Same as R306
R333		Not used
R334		Same as R17
R335		Same as R3
R336		Same as R26
R337		Same as R15
R338 and R339		Same as R4
R340		Same as R3
R341		Same as R81
R342		Same as R30
R343	RC1027214	RESISTOR, FIXED, COMPOSITION: 2700 ohms; ±10%; 1/4 watt
R344		Same as R343
R345		Same as R3
R346		Same as R343
R347		Same as R30
R348		Same as R59
R349		Same as R1
R350		Same as R306
R351	RA0202001	RESISTOR, VARIABLE, COMPOSITION: 2000 ohms
R353	RC1082114	RESISTOR, FIXED, COMPOSITION: 820 ohms; ±10%; 1/4 watt
R353 thru R359		Not used
R360		Same as R352
R361 thru R550		Not used
R551		Same as R17
R552		Same as R30
R553		Same as R3

TABLE V-I. ELECTRICAL PARTS LIST - C803LA (Cont'd)

REF DESIG	SCC PART NUMBER	DESCRIPTION
S1	SC0202006	SWITCH, TOGGLE: DPDT (TONE)
T1	TI1241101	TRANSFORMER, AUDIO FREQUENCY: Audio driver
T2	TO1350601	TRANSFORMER, AUDIO FREQUENCY: Audio output
T3	TI1140701	TRANSFORMER, AUDIO FREQUENCY: Audio input
Y1	XW1116925	CRYSTAL UNIT, QUARTZ: 11.6925 MHz (11.7 MHz crystal filter)
Y2	XW1117075	CRYSTAL UNIT, QUARTZ 11.7075 MHz (11.7 MHz crystal filter)
Y3	XA1112155	CRYSTAL UNIT, QUARTZ: 12.155 MHz (2nd LO crystal)
Y4	SR-CRX1L	CRYSTAL UNIT, QUARTZ: Receive; listed for reference only, not factory supplied
Y5 thru Y300		Not used
Y301	SR-CTX1L	CRYSTAL UNIT, QUARTZ: Transmit; Listed for reference only, not factory supplied

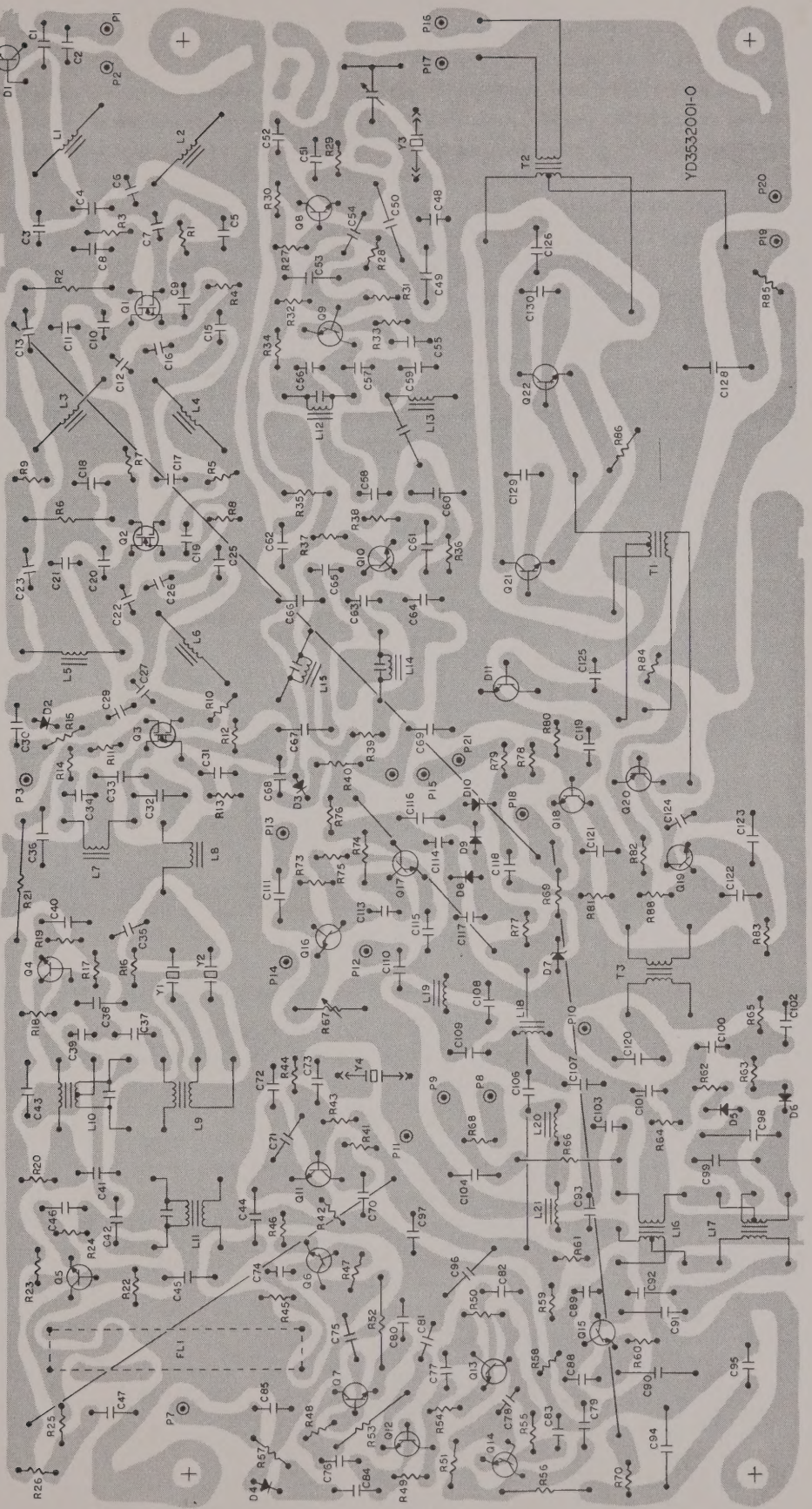

FIGURE III-II MODEL C803LA RECEIVER
CIRCUIT BOARD